

SPECIAL
DETAILING ISSUE!

FineScale MODELER®

FALL 1983 / \$2.25

An M48A3 moving
pillbox diorama in
1/35 scale

Superdetailing Testor's
1/48 F-4E Phantom II

Detailing aircraft
cockpits

Steve Zaloga on super-
detailing armor models
with photoetched parts

Scratchbashing
a boom truck from
MPC's 1/25 scale
Stutz Bearcat



1/32 SCALE



THE '50s-'60s COLLECTION SERIES

THE
'50s-'60s
COLLECTION

1/32 SCALE
Ready to Assemble Plastic Model Kit.

Chevrolet '59 Impala



G-161 CHEVROLET '59 IMPALA

GUNZE SANGYO proudly presents three classic automobiles from the 1950's and 60's.

First to be released is this 1959 Chevrolet Impala. Gunze has recaptured the style and elegance of this classic car with its sweeping tailfin and long body. The front grille is an authentic chromed replica of the real thing. Faithful reproduction of the famous wraparound windshield and teardrop tailights. The model may be assembled with the convertible top up or down. Why not start your collection today with this famous car. This is a fine replica of the fabulous styling so characteristic of the '50s and '60s.

Following soon will be the '63 Ford Thunderbird and the '59 Cadillac El Dorado Biarritz.

Start your collection today! At your local hobby dealers.

IMPORTED and DISTRIBUTED BY

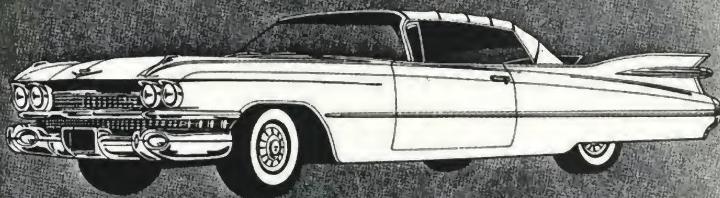
EMPIRE PACIFIC LTD.

18027 CLARKDALE AVENUE
ARTESIA, CALIFORNIA 90701
TELEPHONE (213) 865-4484



G-162 FORD '63 THUNDERBIRD

NEW



G-163 CADILLAC '59 EL DORADO BIARRITZ

EDITORIAL STAFF
Editor: BOB HAYDEN
Associate Editor: BURR ANGLE
Associate Editor: PAUL D. BOYER
Editorial Assistant: MARCIA STERN
Editorial Secretary: MONICA BOROWICKI
Librarian: GEORGE H. DRURY

ART STAFF

Art Director: LAWRENCE O. LUSER
Staff Artist: BILL SCHOLZ
Staff Artist: WELLS S. MARSHALL, III
Staff Photographer: A. L. SCHMIDT
Staff Photographer: PAUL ERLER

EXECUTIVE STAFF

President and Publisher: JAMES J. KING
Editorial Vice President: DAVID P. MORGAN
Vice President, Sales / Marketing: W. A. AKIN JR.
Executive Art Director: GEORGE A. GLOFF
Ad Sales Manager: FREDERICK J. HAMILTON
Circulation Sales Manager: THOMAS J. D'AMICO
Sales Promotion Manager: GARY W. DOLZALL
Advertising Production Manager: ART CURREN
Advertising Production Assistant: SARA BENZ

ON THE COVER

Detailing is the theme of this issue, and all three of the eye-catching models on our cover are superb — but very different — examples of the art. Roger Jackson's prizewinning 1/48 scale Phantom II (page 22) includes dozens of details not found in the kit — and more individual decal pieces than many kits have parts! While Belgian modeler Francois Verlinden's 1/35 scale M4A3 tank diorama (page 56) features in-the-field details you won't find in any kit, Mic Greenberg's "scratchbashed" 1/25 scale boom truck (page 52) draws heavily on model railroad parts for source material. Photos by Francois Verlinden, Mic Greenberg, and FSM Associate Editor Paul Boyer.



FINESCALE MODELER (ISSN 0277-979X) is published quarterly by Kalmback Publishing Co., 1027 N. Seventh Street, Milwaukee, WI 53233, (414) 272-2060. SUBSCRIPTION RATES: 8 issues, \$15; with foreign postage (outside the United States) 8 issues, \$19. © 1983, Kalmback Publishing Co. Title registered as trademark. Second-class postage paid at Milwaukee, WI, and at additional offices. Printed in U.S.A. All rights reserved. This publication may not be reproduced in part or in whole without written permission from the publisher, except in the case of brief quotations used in reviews. POSTMASTER: Send address changes to FINESCALE MODELER, Kalmback Publishing Co., 1027 N. Seventh St., Milwaukee, WI 53233.

FINESCALE MODELER assumes that such material as letters, club news, news releases, new-product information, etc., is contributed gratis. Feature articles and scale drawings are paid for on acceptance. Photographs accepted separately are paid for upon publication. Leaflets outlining in detail the preparation of features, photographs, and drawings are available on request from the Editorial Secretary. Unsolicited material, if not accepted, will be returned only if postage and wrappings are provided for this purpose. FINESCALE MODELER assumes no responsibility for the safe return of unsolicited material.

FineScale MODELER®

VOL. 2 NO. 1 FALL 1983



Page 28



Page 30



Page 47

20 FSM SHOWCASE: A Shelby Cobra in 1/16 scale

JEFF LUSER

22 Superdetailing Testor's 1/48 scale F-4E Phantom II

A shark-mouthed MiG killer in Vietnam-era dress ROGER JACKSON

28 An easy solution to a tough casting problem

The secret weapon is paraffin wax JOHN LYNN

30 Superdetailing armor models

Three techniques that may be new to you, including how to use photoetched metal parts STEVE ZALOGA

38 Detailing aircraft cockpits

The main ingredients are tiny pieces and a bit of time BOB STEINBRUNN

43 Modeling Rick's Café Americain, Casablanca, 1941

You must remember this . . . RICHARD SMITH

47 Modeling Adolph Galland's bare-metal Bf 109F in 1/72 scale

There's always an exception — and this is it WAYNE E. MOYER

52 Scratchbashing a boom truck

This transformation begins with MPC's 1/25 scale Stutz Bearcat MIC GREENBERG

56 Modeling a moving pillbox in 1/35 scale

A simple but effective one-model diorama FRANCOIS VERLINDEN

DEPARTMENTS

4 Update

19 From the Editor

8 Reader Forum

61 Book Briefs

11 Workbench Reviews

69 Tips and Techniques

17 FSM Looks at New Products

74 Index to Advertisers

MICHIANA

— YOUR SEARCH
IS OVER —

HOBBYLAND

343 Lincolnway West
South Bend, Indiana 46601
219-287-0180

— For all your hobby needs —
Armor - Aircraft - Ships
Decals - Tools - Books & Mag.

CHALK-EZ Weathering Sets

We feel this to be the finest set of chalks available in selected weathering colors. Chalk-Ez is an artist's grade chalk, not a blackboard chalk. All colors are blendable to create unlimited shades.

Weathering Set #101: A ten-piece set containing dark brown, rust, white, black, gray, light brown, and the four primary colors of blue, red, yellow, and green.

Accent Weathering Set #102: A ten-piece set containing white, black, and eight new colors selected to give the hobbyist even greater flexibility with his weathering projects.

Each set sells at \$4.98 - individual replacements at \$0.78. See your local hobby dealer. If unavailable, add \$1 for postage and handling.

HOBBY HELPERS

1512 Balmoral Ave.
Westchester, IL 60153

MODEL RAILROAD

BUILDERS tackle a variety of special problems requiring special tools when building their dream pikes. But finding a source for those tools is no problem...the Maxon quality line has the tools.



OUR CATALOG SHOWS OVER 150
INGENIOUS TOOLS. IT'S FREE!

MAXON™

P.O. BOX 243F
CARLSTADT, N.J. 07072

FSM UPDATE

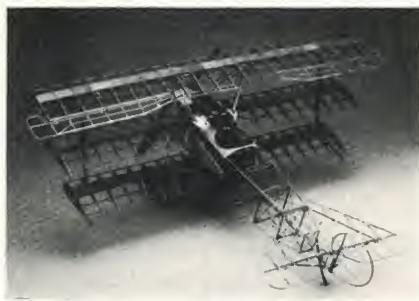
FSM invites manufacturers and publishers to submit news releases, photos, product samples, and new catalogs. Send all material to FSM Update, FINE SCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

Kit releases. The Guano Aeroplane & Zeppelin Works, 5802 Northeast 59th Street, Seattle, WA 98105, sells an injection-molded, clear styrene, 1/72 scale dustbin ventral bombardier/gunner position for the Ju 52/3m. The price is \$1.50 plus \$.40 for postage and handling. The manufacturer recommends the Testor/Italeri kit. European customers should contact Julian Edwards, 19 Larchwood Glade, Camberley, Surrey, GU15 3UW, England.

International Hobby Corporation, 350 East Tioga Street, Philadelphia, PA 19134, the U.S. distributor for 1/8 Pocher car kits, has announced a price reduction averaging more than \$100.00 per kit.

IPMS/United Kingdom, c/o Bob Morrison, membership administrator, 85 Sycamore Drive, Ash Vale, Aldershot, Hants, GU12 5JY, England, has produced a set of vacuum-formed moldings to make a complete set of slipper fuel tanks for a 1/72 Buccaneer S.Mk.2. New members will receive a set of moldings upon payment of a subscription to IPMS Magazine. Subscriptions are £7.50 in the United Kingdom and £11.00 elsewhere.

KPL Models, 703 Cannon Road, Silver Spring, MD 20904, produces and sells vacuum-formed aircraft kits. The kits are molded in thick plastic and come with three-view drawings.



The Fokker Dr.1, kit No. CP-03, the newest kit in the Hasegawa 1/8 Museum Series, is available from Minicraft Models, Inc., 1510 West 228th Street, Torrance, CA 90501. The overall length of the completed model is 28.43" (722 mm) and the wingspan is 32.99" (838 mm). The kit contains 857 pieces and retails for \$350.00.

Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, has added three 1/35 Tamiya kits to its "molded for the U.S. armor series": No. MM120A, German Hanomag Sdkfz 251/1 half-track with a crew of 5 soldiers, \$10.98; MM150A, German 8-ton half-track Sdkfz 7/1 with 5 figures wearing winter uniforms, \$13.98; and MT128A, M60A1 medium tank with figure, \$13.98. Two recent 1/6 motorcycle releases are BS0625, Suzuki GSX1100S Katana, \$76.98, and 1626, Honda CX500 turbo, \$79.98.

Monogram Models, Inc., 8601 Waukegan Road, Morton Grove, IL 60053-2295, has released kit No. 5605, 1/72 B-1B strategic

bomber. Other releases include four 1/24 replicas of Grand National stock cars: 2204, Mountain Dew Buick Regal, 2205, Uno Buick Regal, 2206, Wrangler Ford Thunderbird, and 2207, Melling Tools Thunderbird; three 1/48 aircraft kits: 5807, F/A-18 attack fighter, 5808, F-105F Thunderchief, and 5809, F-106A Delta Dart; two kits from the "Masters of the Universe" series: 6014, Attak Trak, and 6015, Talon Fighter; 2200, 1/24 '70 Chevelle High Roller; and 2201, 1/24 '69 Camaro High Roller.



Two recent releases from Revell, Inc., 4223 Glencoe Avenue, Venice, CA 90291, are No. 4520, 1/144 Boeing E-4B Airborne Command Post, and 7332, 1/25 Datsun King Cab Targa.

Decals. New 1/144 decals from ATP Incorporated, 3014 Abelia Court, San Jose, CA 95121, are No. AD5025, Pan Am 727-221A Clipper, \$3.00; AD5034, Muse Air DC-9 Super 80, \$2.50; AD5038, Alaska 727-100, Golden Nugget Jet, \$3.00; AD5039, TWA L-1011, \$3.00; AD5040, DC-9 and 737 wing egress path and cargo door, \$6.00; AD7277, Federal Express 727-22C, \$1.50; and D-006, Air Wisconsin Metro I or II, \$1.50.

Bare-Metal Foil Co., 19419 Ingram, Livonia, MI 48152, has added these 1/48 decals to its line: No. 48-3, F-4E Phantom, Keflavik, Iceland, \$3.50; 48-4, F-15 Eagle, Luke/Langley, \$3.50; 48-5, F-106A 191st FIG Selfridge ANG Base, Michigan, \$3.75; 48-6, F-106A 102 FIW, 101 FIS Massachusetts ANG, \$3.75; and 48-7, F-106A 177 FIG, 119 FIS New Jersey ANG, \$3.75. Recently released 1/72 decals include 72-4, F-4E Phantom, Keflavik, Iceland, \$3.00; 72-5, F-15 Eagle, Luke/Langley, \$3.00; 72-6, F-106A 102 FIW, 101 FIS Massachusetts ANG, \$3.50; and 72-7, F-106A 177 FIG, 119 FIS New Jersey ANG, \$3.50.

Jet Set System, 549 G La Rambla, Ponce, PR 00731, has released the following 1/144 airliner decal: JSD-114, Delta DC-8, \$3.25; JSD-134, TDA Domestic DC-9-40/80, \$3.00; JSD-140, UTA DC-10-30, \$3.75; JSD-141, UTA 747-200, \$3.75; JSD-144, Southern Airways DC-9-10/DC-9-30, \$3.00; LED-106, Air Gabon 737, \$3.25; and ML-015, TAP Air Portugal 727-100, \$3.25.

Paints and adhesives. Du Pont Company, Wilmington, DE 19898, announced that its Lucite spray enamel has been improved to dry dust-free in 15 minutes when applied to wood, metal, and other paintable surfaces. The company says the enamel finish resists chipping, scratching, corrosion, weathering, fading, scrubbing, grease, oil, and gasoline. Lucite spray enamel is available in 18 colors; a red oxide primer also has been added to the line.

The H754 Duradix Super Adhesive from Maxon, P. O. Box 243, Carlstadt, NJ 07072, has a new bonding action and redesigned packaging. The cyanoacrylate cement bonds most materials, works well on flat, even sur-

faces, and generally bonds in 3 to 20 seconds, according to the company. It comes in a 3-gram, stand-up, applicator bottle.

Pacer Technology & Resources, Inc., 1600 Dell Avenue, Campbell, CA 95008, now sells Zap-Lock in both medium- and high-strength grades. Both are safe for metals, plated parts, plastics, and combinations of metal and plastic. They set in 1 to 5 minutes and cure fully in 10 to 15 minutes, according to Pacer. Both medium- and high-strength Zap-Lock are available in a 1/4-ounce bottle for \$2.49. High-strength Zap-Lock also comes in a 1/2-ounce bottle for \$4.98.

Two other products Pacer recently introduced are Z-Foam Primer and Z-Magnum. Z-Foam Primer is an accelerator for bonding Styrofoam with cyanoacrylate adhesives. It is available in a 2-fluid-ounce bottle with a pump sprayer for \$4.98. Z-Magnum is a two-part (primer and base resin), no-mix acrylic which develops cure-to-handling strength in about one minute and even more strength in four hours. It will work on oily surfaces. A 1-ounce kit sells for \$5.99.

Figures. Ral Partha, 5938 Carthage Court, Cincinnati, OH 45212, now offers boxed sets of "The Best of Ral Partha." Each set contains ten figures for \$8.00. The first four sets available are No. 10-300, Ral Partha Personalities; 10-301, Demon, Trolls, Orcs, and Goblins; 10-302, Angel, Elves, and Elf Lords; and 10-303, "Children of the Night."

The newest release in the collector series of toy soldiers from Vintage Castings, Inc., 127 74th Street, North Bergen, NJ 07047, is the doughboy firing a pistol.



Accessories and diorama materials. Ambroid Company, Inc., 600 West Water Street, Taunton, MA 02780, has released a landscaping kit with which you can create up to 25 square feet of scenery. The kit contains 6 rolls of Rigid Wrap, a plaster-impregnated gauze; 2 pounds of Celluclay, an instant papier-mâché; 1 package of Instamold, a fast-setting mold-making compound; 1 pound of Permostone, a casting compound; 1 pound each of green and black sand; a 4-ounce tube of Se-Cur-It white glue; 1 professional modeling tool; and full instructions. The kit sells for \$27.95.

Tools. Byrom International Corporation, Box 246, Chardon, OH 44024, has introduced two products in its Tinytools line. The Tinytools table saw can be used wet or dry and is slotted for ripping and to accommodate an indexing miter gauge up to 45°. The 12-volt table saw gives full torque at 200



Michigan's 191st FIG paints their F4C's this way. You can do it the easy way.
BARE-METALS'
1/48 scale decals of these beautiful aircraft will enable you to make your F4C model look like the real thing.
#48-1 \$3.50

You will also enjoy these other beautiful decals

#72-4 F4E, 57th FIS, Keflavik, Iceland \$3.00
#72-5 F15's, 48th FIS, Langley AFB, Virginia and 555th TFTS, Luke AFB, Arizona \$3.00
#72-6 F106A, 101st FIS, Mass., ANG \$3.50
#72-7 F106A, 177th FIG, New Jersey, ANG \$3.50
#48-2 RF84F/K, 191TRG and 127TRG, Mich. ANG \$3.50
#48-3 F4E, 57th FIS, Keflavik, Iceland \$3.50
#48-4 F15's, 48th FIS, Langley AFB, Virginia and 555th TFTS, Luke AFB, Arizona \$3.50

AVAILABLE FOR THE NEW MONOGRAM 1/48 scale F106A. Large 4x12" sheet.

#48-5 F106A, 191st FIG, Michigan, ANG \$3.75
#48-6 F106A, 101st FIS, Mass., ANG \$3.75
#48-7 F106A, 177th FIG, New Jersey, ANG \$3.75

Bare-Metal Foil - 6 x 11 sheet \$3.50
Bare-Metal Plastic Polish - 1oz. bottle \$2.00
POSTAGE AND HANDLING

Decals 35¢
Bare-Metal 50¢ 1st; .20¢ ea. additional
Polish 60¢ (separate postage required)

DEALER INQUIRIES INVITED.
BARE-METAL FOIL COMPANY
P.O. Box 82, Farmington, Michigan 48024

BADGER... Tools to help you finish like a pro.

The BADGER Model 200 IL is the perfect tool for finishing scale models. You can blend, shade and stipple... achieve special effects such as camouflage, smoke, fire and weather damage, etc.

BADGER'S Foil/Frisket Film is ideal for pre-cut stencils and masks. It can be used on most surfaces that are to be painted thus preventing underspray. Great for camouflage techniques. Available in sheets and rolls.

BADGER'S Fluid Filter is designed for use with air-brushes that use jars or bottles. The microscreen filter eliminates lumpy paint or foreign particles that normally pass through the air-brush and cause plugging. The Fluid Filter slides on and off easily for quick cleaning.

You'll find these tips and much more in BADGER'S Hobby and Craft Guide to Air-Brushing.

Ask for BADGER products at your local hobby, craft or art store or write Dept. 855 for Catalog BA300. Please enclose \$1.00 to cover cost of postage and handling.

Prices slightly higher in Canada.

BADGER AIR-BRUSH CO. 9128 Belmont Ave. • Franklin Park, Ill. 60131
Dist. in Canada by: HOBBY INDUSTRIES 24 Ronson Drive Rexdale, Ontario M9W 1B4

1. Using a mask as shown, spray through the openings, move the mask over the next area to be sprayed. Hold the mask at least 1/2" from surface for a soft edge effect.

2. Another way to achieve the mottled effect is by free-hand spraying. Set the spray width to fine and hold the air-brush close to the surface using tight, erratic hand motions.

© BACo. 1981

Fall 1983 5

CROWN • EIDAI/GRIP • EKO • ESCI • FORMA PLANES • FROG/NOVO • FUJIMI • HASEGAWA • HELLER •
O • ROSKOPF • SQUADRON/SIGNAL PUBLICATIONS • TAMIYA • TESTORS • TSR GAMES & RULES

W.R.W. IMPORTS, INC.

ALL INQUIRIES WELCOME

**SCALE MODEL KITS & ACCESSORIES
FROM AROUND THE WORLD**

Catalog \$1.00

10 South Havana #108
Aurora, CO 80012
303/340-3844

W.M.B. WOODEN MODELS • IMAI • ITALAREI
VALIANT CLAN PRINTS • WATERLINE SHIPS
JOHAN • KDOVZAVODY/CZECH • LS • MAGAZINES • MATCHBOX • METAGAMING • MICRO SCALE DE
CALS • NICHIMO • PEERLESS • RAREPLANES • ROC



Mitchell Products, Inc.

"Where Quality Comes First"

Hobby Vent

- Quality Features Designed In For Years Of Reliable Service.
- Complete Selection of Fine Options.
- See Your Local Hobby Dealer.

Send SASE for literature, to: Mitchell Products, Inc., 421 N. Lake Street, Mundelein, IL 60060

Waldron Model Products

1358 Stephen Way
San Jose Ca. 95129
(408) 252-7422



THEY'RE HERE (at last). The F-14 Cockpit Placard Set. Now you can do that beautiful Tomcat right. 1/32nd set \$18.50. 1/48th set \$10.15. See them at your dealers, or order direct.

Add 10% of order, postage and handling. For fastest return include postal money order. Foreign orders add 15% of order. International money order or check drawn on U.S. bank for U.S. funds. Calif. residents add 6.5% state tax.

DEALER INQUIRIES INVITED.

rpm and all speeds up to 17,000 rpm, according to Byrom. The 12-volt Tinytools disc sander is air-cooled and 3" in diameter. Sanding discs can be changed in three seconds because of a Velcro backing. The disc sander has a removable 4" x 2 3/4" table.

Foredom Electric Company, Route 6, Bethel, CT 06801, has released a miniature drill press stand. The DP-30 has a smooth lever-action drill stroke, and both the drill stroke depth and the drill height are adjustable, according to Foredom. It has a base plate and an adjustable table. The DP-30 is designed for use with Foredom's No. 30 and 44B handpieces and any of Foredom's ten flexible shaft machines which have a variable speed range of from 0 to 14,000 rpm. A free data sheet, No. 288, is available from Foredom.

Millers Falls Tool Company, Second and Harding, P. O. Box 1030, Alpha, NJ 08865, has introduced a new line of soldering guns. They feature a built-in spotlight, dual heat, straight-pull trigger, and 5-second heat-up. The soldering guns are available individually or packed in molded plastic cases with wrench and solder; quick-change tips for soldering, smoothing, and cutting; and self-standing backs to keep the tip in the air during pauses in use. A general-purpose, heavy-duty gun costs \$25.95 separately, \$29.95 with the accessories. A professional gun is \$35.95 separately, \$39.95 with the accessories.

Carl Zeiss, Inc., One Zeiss Drive, Thornwood, NY 10594, sells high-resolution binocular prism loupes in a headband or eyeglass mount; both flip out of the way when not needed. The eyeglass model can be fitted with prescription lenses. The binocular loupes are available in magnifications from 3.2x to 4.5x for use at distances of 10", 14", 18", or 20". Air-to-glass surfaces have an antireflection coating. Write to the Scientific Instrument Division of Carl Zeiss for further information.

Catalogs. A free, 48-page, Spring/Summer 1983 catalog of 1,200 aviation books is available from Aviation Book Company, 1640 Victory Boulevard, Glendale, CA 91201. Outside the U. S., send \$2.00 to receive the catalog by airmail.

Hank Clark Jr., Archive Specialties, 7285 May Street, Fort Edward, NY 12828, sells 7" x 11" black-and-white photos of almost every American-built aircraft from 1925 to 1950, as well as lithographs by Hank Clark Sr. of many U. S. WWII military aircraft. Send \$2.00 for a sample photo, lithograph, and catalog.

Hannant's, 56 London Road North, Lowestoft, Suffolk, NR32 1EP, England, sells a catalog for \$2.00 which lists books, decals, kits, and paints.

A 32-page Summer 1983 catalog of aviation books is available for \$1.00 from Historic Aviation, 3850 Coronation Road, Eagan, MN 55122.

Send \$1.00 for the 36-page 1983 catalog of books, kits, decals, and other modeling supplies to Jet Set System, 549 G La Rambla, Ponce, PR 00731.

An illustrated catalog of cast accessories for war games and dioramas is available from Mainly Military & MBG Accessories, 103, Walsall Road, Lichfield, Staffordshire, WS13 8AD, England.

Moody Tools, Inc., 42-60 Crompton Avenue, East Greenwich, RI 02818, sells a 36-page catalog for \$2.00. It describes the com-

plete range of miniature hand tools in the Moody and Acu-Min lines.

1983 catalogs of plans, scale drawings, and photos available from Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488, are No. 1, aircraft (\$2.60); No. 2, ships (\$3.00); No. 3, armor (\$.50); No. 4, card models (\$.60); No. 5, books (\$.40); and A, Model & Allied Publications drawings (\$.175). Catalogs 1-5 combined cost \$6.00.

A 64-page Summer 1983 catalog from Squadron Mail Order, 1115 Crowley Drive, Carrollton, TX 75011-5010, sells for \$2.50.

Miscellaneous. Color prints of the P-47D Thunderbolt Escort and P-47D Thunderbolt Pursuit by John Ficklen are available from Aero Graphics, P. O. Box 28583, Atlanta, GA 30328. The prints are 18" x 24" and sell for \$55.00 each or \$100.00 for the pair. Add \$3.00 for shipping and handling.

J. J. Daileda, 4314 West 238th Street, Torrance, CA 90505, is the U. S. subscription agent for magazines published by Model & Allied Publications. Send a stamped, self-addressed envelope for information.

IPMS/Hawaii, 1650 Leihia Street, Honolulu

Hu, HI 96818, is selling a 50-page compilation of the first six issues of its newsletter for \$5.00, including postage.

The first in a series of scale documentation packets from Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488, features the Mudry CAP 21 aerobatic airplane. The packet sells for \$29.50 postpaid and includes drawing No. 124-RCM, consisting of 4 sheets, each 11" x 17", with scale approximately $\frac{1}{2}$ " = 1', and 4 photo packets with a total of 42 color and 6 black-and-white photos. The drawings and photo packets also may be purchased separately.

Robert F. Slater, P. O. Box 365, Surrey, BC, V3T 5B6, Canada, plans to compile an annual list of static display aircraft kits, modeling periodicals, monographs, and preserved airplanes. He invites manufacturers of aircraft kits, decals, and scale drawings, publishers of books and magazines on aircraft and aircraft modeling, museum curators, and air show organizers to write for further information.

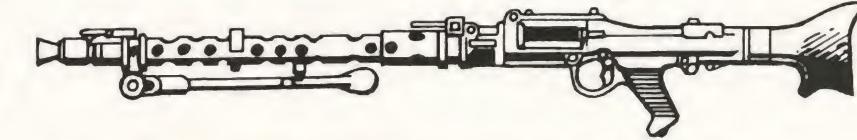
Unique Woodcraft, Inc., 175 L Penrod Court, Glen Burnie, MD 21061, sells hand-crafted display cases in mahogany or oak.

Verlinden Productions, Berlaarsestraat 36, 2500 Lier, Belgium, announces the release of *The Verlinden Way: Military Models and Dioramas, Volume II*, by Francois Verlinden. *Volume III, On Plastic Wings: A Complete Guide to Plastic Aircraft Modelling*, by Francois Verlinden, will be released in October 1983.

Coming events. The Military Collectors of New England will hold their ninth annual exhibition and competition on Saturday, September 17, 1983, at the Holiday Inn, Routes 128 and 1, Dedham, Massachusetts. Further information is available from the Military Collectors of New England, P. O. Box 534, Harvard, MA 01451.

The First Annual East Coast Toy Soldier Show will be held on Sunday, November 13, 1983, from 10 a.m. until 4 p.m. at Schuetzen Park Hall, 3167 Kennedy Park Boulevard, North Bergen, New Jersey. Admission is \$2.00 for adults; children under 12 are admitted free when accompanied by an adult. Write to Vintage Castings, Inc., 127 74th Street, North Bergen, NJ 07047, for additional information.

FSM



Take a hard look

THESE ARE, IN FACT, REMARKABLE MINIATURES



1/32-1/35 SCALE

MILITARY HARDWARE IN BRASS

FOR MORE INFORMATION, send a SELF ADDRESSES STAMPED ENVELOPE to receive our complete illustrated Catalog Sheet.

CREATED FOR THE PROFESSIONAL MODELER, AND THOSE WHO WANT TO BE.

COMBAT SERIES

Dept. F, P.O. BOX 475 PINEDALE, CALIFORNIA 93650

1930's DIMESTORE Vehicles & Soldiers

MANUFACTURED FROM

ORIGINAL MOLDS

HOLLOW CAST IN A SPECIAL
WHITE METAL LEAD ALLOY



Now, the American Dimestore Figures that were so popular years ago are once again available for your collecting pleasure. A full line of Vintage Autos & Trucks with white rubber tires, 3 $\frac{1}{4}$ " WWI Doughboys, Santas, Ice Skaters & Skiers, repair & replacement parts. All manufactured & sold direct to Modelers & Collectors. Send for your catalog today!



VINTAGE CASTINGS, INC.
127 - 74th Street North Bergen, N.J. 07047

(201) 861-2979

Enclosed is \$1.00, please send me the NEW 10 pg. Vintage Castings' 1983 Dimestore Catalog by First Class Mail.

Name _____

Address _____

City, State, Zip _____

FSM READER FORUM

Let us know what you think! Comments, suggestions, corrections, and additional information on FSM articles are welcome in this column. Letters submitted for publication should be clearly marked "To the Editor" on both the envelope and the letter, should be typed or hand-printed, and should be no more than 300 words long.

Thoughts on those bigger models. I believe your theories about larger modeling subjects are valid. As evidence within the last five years we've seen a C-47, B-26, and no fewer than two examples each of the B-17, B-25, and B-24 (counting this year's Monogram release) — all of them in 1/48! And, of course, the biggest, the B-29.

I would, however, offer one caveat and one bit of advice to the manufacturers. My wife and I gave up in disgust on a 1/72 Corvette, not because the kit was time-consuming or complex, but because the fit of the parts was poor and the detailing minimal. For a ship that large (over 33" long) and expensive (\$85 retail) this is almost criminal. If it's going to be big, fine, but such details as gun armament, etc. had better be there.

And what about 1/48 scale? For aircraft it offers a size large enough for detailing, but not too large, and is the foundation of a potentially large personal collection. Manufacturers, please take note, and diversify your new releases into 1/48. Give us a B-1B, all right, but remember: Quality is everything and bigness isn't.

John J. DeVries
Astoria, N. Y.

Regarding your editorial in the Summer 1983 issue, add my vote for bigger models. I began building scale aircraft 10 years ago and selected 1/32 scale models for the detailing potential they offer. But where are all those WWI and other early history-making aircraft I hoped to build? Thanks to Williams Brothers and Hasegawa, there are a few. But, alas! The rest are only visions in my scrapbox.

William E. Dell
S. Holland, Ill.

natural-metal painting techniques, and several authors have promised more articles on the same topic for the future. — B. H.]

Suggestion: A photo feature. How about one or two pages of photos sent in by modelers? I've always loved looking at a kit or diorama that's done nicely, and I'm certain others do, too. Besides giving ideas to others, a feature like this would give a lot of modelers a chance for their work to be shown.

Paul Muckler
Milwaukee, Wis.

FSM's better than he'd expected! Just a quick note to tell you how much I appreciate your fine magazine. I have been building models for the past twenty years or so, and was recently involved with the retail sales end of the hobby. When we first heard about your new magazine we were, needless to say, a little skeptical about what we read and heard. However, after reading and rereading the first four issues I must tell you that I am much impressed. The articles and tips are extremely well written, clear and concise, and very helpful in my own modeling.

After reading the Spring issue articles on the Eddie Allen B-29 and Bruce Mathes' article on the F7F Tigercats, I am wondering if any of your readers have any tips to make painting natural metal and color paint schemes easier. I'm thinking mainly of the B-47 and early B-52 colors — natural metal and white undersurfaces. I always have trouble with that design.

Bob Wright

[Help is on the way, Bob. Over the next six months we'll have at least one article on

And how about spacecraft? I've just discovered your fine magazine and have already subscribed. One of my greatest disappointments in the modeling field is the lack of information concerning operational spacecraft. There are volumes of reference materials on famous airplanes, tanks, autos, etc., but what about such things as the old Gemini and Apollo spaceships, as well as the shuttles? As a space buff, I feel articles on the *Enterprise*, *Columbia*, and *Challenger* are in order. I've built the large Monogram shuttle, detailing it as *Columbia*, and plan to do *Challenger* as well.

How about it? Meanwhile, keep up the good work!

Jeff Brown
Wichita Falls, Tex.

[I agree with you that FSM needs more articles on real spacecraft, and we're searching for authors. In fact, I'm working with at least two authors for articles on just that subject, to be published in future issues. Fair enough? — B. H.]

FSM

Great airbrushing is for the birds. The Binks birds.

The Raven and Wren will do just about anything an artist or craftsman will want to do. And, do it easier.

That's because they're precision engineered for great performance. And because they're made with the finest materials available. (We even made them to be serviced in the field, by you.)

They're strong, versatile, and reliable... the only airbrushes you'll ever need.



The double-action



The single-action

The Raven airbrush...for photo retouchers, artists, animators, architects, and fine model builders.

The Wren airbrush...for hobbyists, background work, auto refinishers, and general industry. A great choice for your first airbrush.



Binks offers complete airbrush outfits, air compressors, oil and water traps, air regulators, hose, canned propellant, and more. For more information on our complete line, write for brochure A59-12 FS.

Binks Manufacturing Company
9201 W. Belmont Ave., Franklin Park, IL 60131

BINKS

Binks is a registered trademark of Binks Manufacturing Company



HUEY

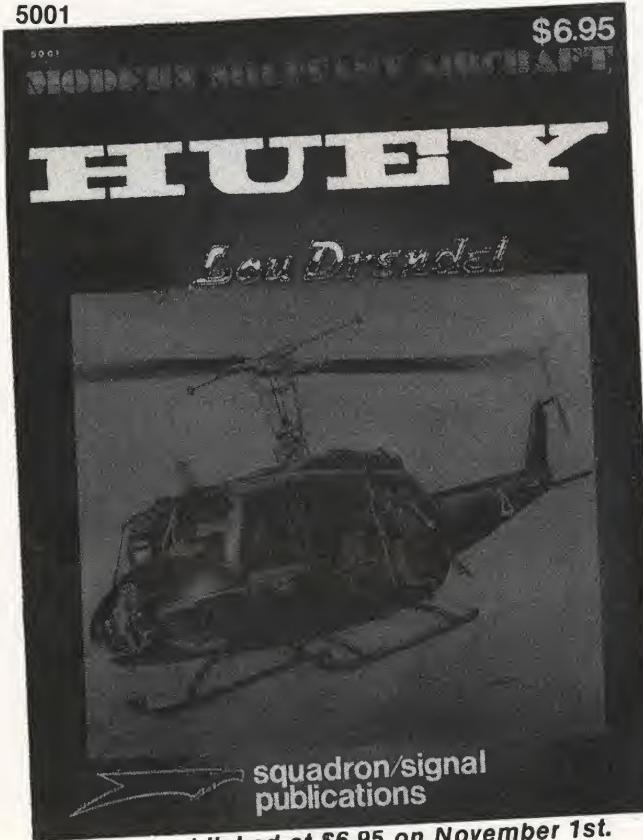


Huey, by Lou Drendel, will be available on November 1, you can save \$2.00 today on this great prepublication offer!

Don't miss this first book in Drendel's new series, **Modern Military Aircraft**!

5001

\$6.95



HUEY

by *Lou Drendel*
illustrated by Lou Drendel

The very number of UH-1 Iroquois employed in the Vietnam War guarantees that it was witness to more acts of raw courage than perhaps any aircraft in history. This book, dedicated solely to Huey will concentrate on the operational life of Huey. The missions it flew, the people who flew it, their stories, and the markings Huey carried in its many roles.

Thus ends the introduction to **Huey**. A penetrating study of the more than 26,000 Hueys to fly, Lou Drendel has combined battlefield recollections, in-depth research, 72nd scale plans, actual combat photos, and vivid color paintings to portray the life and wars of the UH-1 Huey.

Much sought after by aviation enthusiasts and historians, **Huey** includes 17 color paintings, 138 B&W photos, and 9 72nd scale line drawings. This prepublication offer is your opportunity to get this great book for only \$4.95, TWO dollars below its retail price. Order this first in the **Modern Military Aircraft** series TODAY!

8 Pages
of Color
64
Pages
72nd Scale
Drawings

To be published at \$6.95 on November 1st.

Books will be mailed upon publication, November 1, 1983.

ORDER TODAY — ORDERS CAN NOT BE ACCEPTED AFTER NOVEMBER 1, 1983!

DETACH AND MAIL ONLY TO SQUADRON/SIGNAL PUBLICATIONS — THIS IS YOUR RETURN MAILING LABEL — PLEASE PRINT CLEARLY



SHIPPING LABEL

83061-27

I wish to take advantage of your special prepublication prices.

Please send me the following Books:

— 5001 *Huey* \$4.95

Postage: 1 book — \$.75

2 books — \$1.25

3 or more books — \$1.50

I enclose _____ in a check or money order in **U.S. Funds** including postage.

Checks and money orders MUST be made payable to Squadron Signal Publications.

**Squadron/Signal
Publications, Inc.**

Dept. PP-2
1115 Crowley Drive
Carrollton, Texas 75011-5010

Name _____

Address _____

City _____

State _____ Zip _____

OFC. USE ONLY

5001

SAC, YOUR B-1B IS READY!



Monogram launches the B-1B Bomber before the Strategic Air Command! It's just come off our line, in 1/72 scale, with detail so authentic you'd think it could take to the sky. Kit includes variable-position swing wings and movable horizontal stabilator, 17 Air Launched Cruise Missiles, fully equipped cockpit and weapons bay, 4 crewmen, 4 turbofan jet engines and a colorful prototype paint scheme. Launch your own B-1B Bomber before SAC. Go to your favorite store and take off with the real thing from Monogram.



MONOGRAM

Every FSM Workbench Review is a first-hand report by a modeler who has actually built the kit or used the product. While our reviewers are encouraged to compare the products to similar ones in their experience, evaluation is of secondary importance; the reviewer's primary goal is to provide a detailed description of the product so FSM readers can evaluate it for themselves. Models shown in Workbench Reviews are built straight from the box.

Kit: No. 8038, Peterbilt 359 Conventional
Scale: 1/25
Manufacturer: Ertl, Highways 20 and 136,
 Dyersville, IA 52040
Price: \$16.25.

THE PETERBILT CONVENTIONAL is one of the most popular subjects for truck models. Ertl uses styrene, vinyl, and 11 cast metal parts in this 151-piece kit. The model features a double sleeper along with movable front wheels and an opening hood. The main frame, rear axles, fifth wheel, and front axle assembly are die-cast metal. The molding is average for the styrene parts; the metal parts needed a little filing to clean up rough edges.

I built the model using Hot Stuff to bond the metal to styrene parts. The model was built and painted in subassemblies starting with the frame, then moving to the wheels, cab, sleeper, and engine. The instruction sheet was unclear and confusing. My first problem was the main frame. Part 112A is a styrene frame cross member which, according to the instructions, needs to have a notch cut out at both ends; however it is not clear which side of the part is to be cut. Unfortunately, I installed the part backwards and did not discover this error until I test-mounted the cab on the frame. A tab beneath the rear of the cab rests on a shelf on part 112A; if the part is installed backwards, the tab misses this shelf and the cab ends up leaning back. Since I had attached this part with Hot Stuff, I had to break apart the bond and reinstall the cross member.

The steering column (No. 101) and floor pedals (No. 114) collided due to the uncertain location of the floor pedals to the interior (No. 100). I also had trouble mounting the rear mud flaps (Nos. 85 and 86) to the



All photos, FINESCALE MODELER: A. L. Schmidt, unless otherwise credited.



rear end of the frame. The rear frame cross member interfered with them and I was forced to shorten their mounting pins. The instructions do not give a part number for the pogo stick and its installation is easily missed in the sketch.

Another assembly problem appeared with the two engine cylinder heads, No. 74. The first diagram does not show the notches that the exhaust manifolds attach to, so it is easy to mount the heads incorrectly. The fit of parts No. 73 and 84 to the rear of the engine and transmission is not well defined. I had to bend parts 104 and 105 to get them to line up to part No. 30. The instructions do not show that part No. 107 attaches to No. 116 as well as to No. 67.

The drive shaft (No. 113) has a small tab

which mounts to a frame cross member, but the instructions do not show that. The exhaust pipe (No. 115) is shown twice, once to show its installation to the chrome muffler pipe, and again as the other end is installed to the engine. After searching the sprues for another exhaust pipe, I realized that this was the same part: very confusing. The instructions label but do not show where parts Nos. 5 and 6 are to be attached, so I had to guess and attached them to the cab.

The parts fit was average and the kit built up into a presentable model. I painted mine with Floquil Bright Gold and overcoated with Floquil Lustre Glaze Red. This combination created a burnt orange "candy apple" effect. I also used Lustre Glaze to tint the fog lamps, taillights, blinkers, and running lights on top of the cab. There were no instructions for painting or decaling, although decals were provided for American and Australian Peterbilts. The box top shows built-up models, but the decals used for them were not those included in the kit. I used a minimum number of the kit-provided decals. The completed model measures 13" x 4" x 5 1/4".

I spent 15 hours on this kit. Due to the unclear assembly instructions, I can only recommend it to modelers who have had experience with truck kits. A novice truck modeler may want to know the names and functions of some of the parts, and exact attachment information, but the poorly designed, no-language instructions will cause many to seek a simpler kit.

Paul Boyer

Kit: No. 4719, McDonnell Douglas F-15E Strike Eagle
Scale: 1/32
Manufacturer: Revell, Inc., 4223 Glencoe Avenue, Venice, CA 90291
Price: \$21.60.

THE STRIKE EAGLE is the latest development of the F-15 that will replace aging F-4 Phantom IIs as the Tactical Air Command's primary strike aircraft. It is an uprated two-seat F-15D ground attack aircraft that may see service as an F-111 and Wild Weasel replacement.

Revell's kit contains 209 parts molded in light gray and tinted clear styrene with three rubber tires. The recessed panel lines and molded-in detail are outstanding. I



AIRCRAFT

We carry all Airpress 1/35 Vacuforms

ARMOR

BIG DISCOUNTS

Mail Order Only

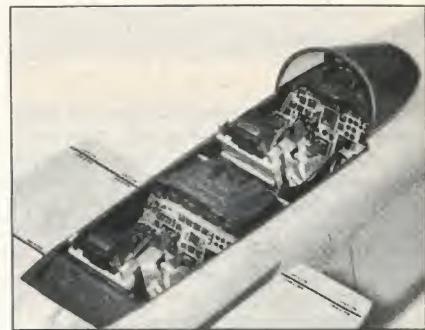
Diorama Accessories Our Specialty

We stock all the usual Name-Brand Kits and many unusual Diorama Accessories, Supplies, and Imported Reference Books. Specialized modeling supplies.

MODELER'S DISCOUNT HOBBY SHOP

P.O. Box 105, Dept. FS, East Rochester, New York 14445

\$1.00 for our new catalog will be refunded on your first order.



didn't experience any major fit problems, but the fit of the intakes and the left wing needed a little work. I try to avoid using putty and instead work on the kit parts until they fit.

Normally, I like to add details to the cockpit, but the detailed consoles, instrument panels, sticks, and seats left little to be added. Revell chose to produce an accurate canopy but had to use a two-piece mold to do it. This produced a seam down the middle which I carefully sanded and polished out.

The kit contains the bean-pod-shaped FAST (fuel and sensor, tactical) packs that hug the intakes and wings. A GE 30 mm gun pod, 4 AIM-9L Sidewinders, and 16 500-pound bombs make up the ordnance.

The instruction sheet has 69 no-language steps, many of these involving only a few parts. The only disappointing thing in the kit was the decals. They give you lots of stencils and markings for two aircraft, but my sample was out of register. I supplemented them with various Microscale decals. The marking options include the prototype Strike Eagle in the Europe One camouflage colors and another aircraft in Compass Ghost Grays. I chose the gray version, mixing Pactra enamels to match FS colors listed on a Microscale decal instruction sheet.

The kit scales perfectly with the information in Bert Kinzey's *F-15 in Detail and Scale*. I spent 45 hours on this kit. A modeler who has had a couple of years of experience should enjoy building this impressive model.

Larry Schramm

METALIZER™

THE ULTIMATE IN MODEL METALIZING FINISHES

NEW IMPROVED FORMULA

A unique product for unique models. From the people who invented the world's first plastic model metalizing finish. No other metalizing finish offers you the versatility of Metalizer. For all types of aircraft, car, ship, train, armour and science fiction models. Airbrush on and buff to a brilliant sheen in minutes. Metalizer is a tough and durable waterproof finish. With 13 metal shades, sealer and 2 dayglow colors to choose from.

1. ALUMINUM
2. STEEL
3. MAGNESIUM
4. TITANIUM
5. GUN METAL
6. EXHAUST
7. SEALER
8. DAYGLO-RED
9. DAYGLO-ORANGE
10. DARK ANODONIC GREY
11. METALLIC BLUE
12. GOLD
13. BURNt METAL
14. COPPER
15. BRASS
16. *ALUMINUM-NON BUFFING
17. THINNER
101. *ALUMINUM PLATE
*NEW FOR 1983
IN AEROSOL CANS

METALIZER PRODUCTS
1019 BONITA ST.
TUSTIN, CA 92680

SEND STAMPED & SELF ADDRESSED ENVELOPE FOR METALIZER BROCHURE

Dealer Inquiries Invited

METALIZER

1/72 SCALE DISPLAY MODEL KITS!



Highly detailed plastic scale model kits of historical aircraft. Build these accurate miniature reminders of aviation's Golden Age!



SEND \$1 FOR FULLY ILLUSTRATED CATALOG DEPT. F
181 PAWNEE ST. SAN MARCOS, CALIFORNIA • 92069

Kit: No. 1-1920, Shuttle Tydirium

Scale: None stated

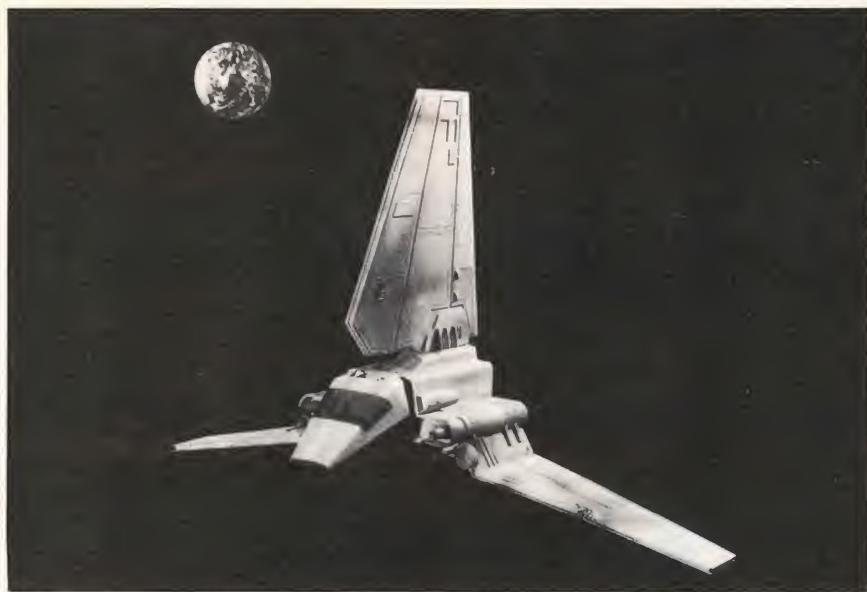
Manufacturer: MPC, Division of CPG Products Corp., Mount Clemens, MI 48045

Price: \$13.00

THE LATEST MOVIE in the *Star Wars* trilogy has brought us a new series of unusual spacecraft and MPC has released models of all the new machines. Perhaps the most intriguing is the Shuttle Tydirium, the Imperial spacecraft hijacked by the rebels and used to penetrate the defenses of the planet Endor. Its pterodactyl-like variable-geometry design is sure to make it popular.

MPC's kit contains 61 pieces molded in light gray and tinted clear styrene. The molding is average with both raised and engraved surface detail. The cockpit is well detailed and an operating boarding ramp is included.

The construction is not difficult but the fit is awkward. I had trouble keeping the fuselage halves (Nos. 1 and 2) together after the moving wings were inserted. The three hinges for each wing protrude from slots in the fuselage and when the wings are oper-



ated the hinges bind on the fuselage seam. I recommend careful fitting and a long drying time for the glue before operating the wings.

The landing gear needed some beefing up so I poured gap-filling super glue into their mounts. The folding wings will not sweep all the way down if the landing gear is installed. Apparently the huge vertical sail posed a molding problem for MPC. There is an additional sprue that feeds styrene into the middle of each half. A panel covers this cutout after the sprue stub has been trimmed away. Darth Vader and two pilot figures are included.

I painted the model before I saw the movie and I couldn't help adding a little battle damage with a soldering iron. *Tydirium* never sees battle in the movie. I used various shades of Floquil grays with Antique Bronze around the blaster damage. No decals are provided.

The model took about five hours to complete. The completed model is large with a fully spread wingspan of 20" and the craft measures 11½" high. It can easily be built by novices, young or old, and enjoyed by Jedi knights, droids, and wookies alike.

Paul Boyer



Kit: No. MM-222A, M4A3 Sherman

Scale: 1/35

Manufacturer: MRC Tamiya, Model Rectifier Corporation, Edison, NJ 08817

Price: \$10.98.

THIS IS THE FIRST kit of the Sherman in this popular armor scale to feature the grousers or "duckbill" track extensions for maneuvering on soft ground. Tamiya's 146-part kit of olive drab styrene with polyvinyl track has been well executed. The detail in

the tracks is exceptional while the remainder of the kit is up to Tamiya's usual high standards. The suspension and the molded-on detail are nicely done. The decal sheet of U.S. Army markings is printed in black and white. The easy-to-follow instructions are in both English and German.

The kit parts fit well with no reworking required. I left off most of the small parts until just before painting to avoid losing them, and I left off the hand tools until after painting. When I got to step 10, I noticed

MILITARY HISTORY ON VIDEOTAPES

WWII German newsreels of the great battles, rare Allied documentaries, Korea, Vietnam and contemporary Soviet Army films reproduced from original source materials. Over 200 titles. Send \$1.00 (refundable) for illustrated catalog.
INTERNATIONAL HISTORIC FILMS
Box 29035, Chicago, IL 60629

BIG DISCOUNTS

AIRCRAFT, ARMOR, SHIPS, PAINTS, BOOKS

★ BATTLE HOBBIES ★
P.O.BOX 184
ST. PAUL PARK, MN 55071

CATALOG & UPDATES \$1.00

All Regular Lines Plus:

- KOKU-FAN
- WAFFEN ARSENAL
- KOOKABURRA
- MARU MECHANIC
- AOSHIMA
- NOVO

VISA & MC ACCEPTED

IN OHIO...

...Adult modelers
shop with us.

ARMOR • AIRCRAFT
DECALS • BOOKS
TOOLS • MINIATURES
FOREIGN MAGAZINES



STRETE HOBBIES



3655 Sullivant St., Columbus, OH 43228

Grandt Line

PLASTIC RODDING!

USES: AIR PIPES, PLUMBING, ETC
ON CARS AND STRUCTURES

PROTOTYPE SIZES

	"O"	"S"	"HO"	"N"
.010	1/2"	5/8"	7/8"	1-5/8"
.020	1	1-1/4	1-3/4	3-1/4
.030	1-1/2	2	2-5/8	4-3/4
.040	2	2-9/16	3-1/2	6-1/2
.050	2-1/2	3-1/4	4-7/8	8

12" Long Pieces 12/2.50

AVAILABLE AT YOUR DEALER
OR DIRECT

AN ILLUSTRATED CATALOG
IS AVAILABLE FOR \$1.50
(REFUNDABLE WITH ORDER)

1040 B Shary Court, Concord, CA 94518



VAC FORMS FOR THE AVERAGE
MODELER

NEW VAC FORMS TO BE
RELEASED - FALL 1983

17 N. 4th Street
Emmaus, PA. 18049

Lencraft

Our SPECIALTY is out of production & hard
to find Aircraft-Ships-Armour-Decals

- ITALERI
- FROG
- AIRFIX
- MATCHBOX
- NOVO
- US AIRFIX
- HAWK
- ESCI
- MPC AIRFIX
- VACUFORMS
- REVELL
- VEB
- HASSEGAWA
- KP
- HELLER

Free search service for those wanted kits.
Monthly hot sheet mailing.
Send large SASE for list.

P.O. Box 8010, CALABASAS, CA 91302-8010

MURPHEY'S RULES

A series of accurate and easy-to-use rulers produced especially for scale modelers. Two scales on each ruler; four feet of one-inch increments. Permanent photoprocess on natural or black aluminum; 11 $\frac{1}{4}$ " long!

RULE I—1/72 and 1/48

RULE II—1/35 and 1/32

NEW! RULE III—1/43 and 1/25 NEW!

Available for \$2.50 at quality hobby shops or mail order direct. Specify color; add \$1.00 p&p; Ohio residents add \$0.14 sales tax.

Dealer inquiries invited.

MURPHEY MODEL PRODUCTS
P.O. BOX 8181
CINCINNATI, OHIO 45208

THE

SOLDIER CENTRE

"BOSTON'S MILITARY MINIATURE SHOP"

PHONE
(617) 325-2412

PREMIER PRODUCTIONS

A new line of 1/48th scale metal figures which will include WWI, WWI and up to the present.
A1. Harrier Pilot seated
A2. Harrier Pilot standing
A3. Ground Crew hands on hips
A4. Ground Crew arm out to left
A5. Ground Crew arm out to right
Next release: WWI American fighter pilots & ground crew.

Latest Book Releases from
Vanguard

- #35 Armour of the Pacific War
- #36 The Long Range Desert Group

One of the largest stocks of U.S. and imported figures in the country.

P. O. BOX 38
WEST ROXBURY,
MASS. 02132

Regular Newsletter

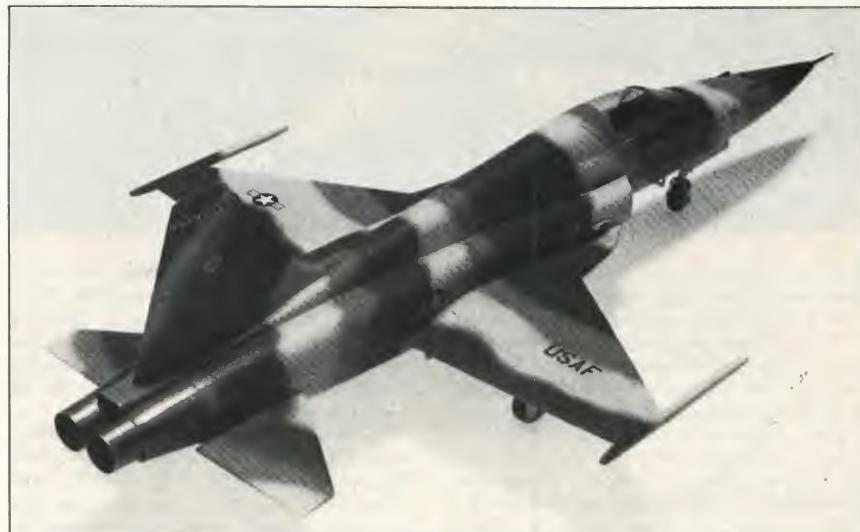
that daylight was visible between the upper and lower hull halves when you look into the open cupola. I blanked off both sides with sheet styrene strips measuring $\frac{9}{16}$ " x $5\frac{1}{32}$ ". The instructions do not mention that you have the option of leaving all the hatches open or closed, nor that the old-style cupola could revolve 360 degrees.

Some improvements can be made to this kit. There is no gun breech provided and there is plenty of room for detailing the interior. I would cut open the loader's hatch on the gun turret and add towing cables and

pintles. There are also conversion possibilities to 76 mm and 105 mm gun versions. I prefer a full driver figure over the half figure given in the kit. Further research on markings using available books on the Sherman will offer alternate markings to the decals.

I would recommend this kit to a modeler who has had a few years' experience building tank kits. Tamiya has provided a very nice kit out of the box and a good starting point for a superdetailing project.

Glenn Kreinus



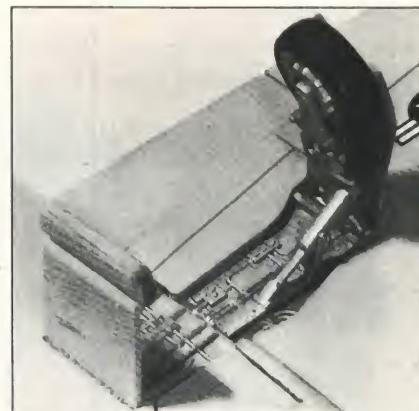
Kit: No. 686, Northrop F-5E Tiger II
Scale: 1/72
Manufacturer: Testor Corporation, 620 Buckbee St., Rockford, IL 61101
Price: \$6.00

TESTOR AND ITALERI have produced the first 1/72 scale model of this beautiful aircraft. This upgraded version of the successful F-5A was bought by many foreign air arms as well as the U. S. A. F and U. S. Navy who use them as aggressors simulating Soviet-block aircraft in dissimilar aircraft combat training.

The 50-piece kit is molded in light gray and clear styrene with raised panel line detail. The fuselage is split horizontally from the tip of the nose to the end of the engine housing. The split is placed low, even with the wing. The top section includes the wing, and is similar to the way that many F-16 kits are molded. Since the F-5E has a low wing, the bottom piece is small, just big enough to include the wheel wells and bottom fuselage details.

The fit of the fuselage halves is very good except at the point where the wing meets the fuselage; there is a gap there that can be filled without too much trouble. I had to file the intakes and the vertical stabilizer to get them to fit perfectly.

The detail in the wheel wells and speed brake areas is excellent for this scale. The cockpit interior is also very good including an engraved instrument panel. The seat is good but it is split down the middle, making it difficult to clean up the seam. One disappointing part is the simple angled piece of plastic designed to hold the canopy in the open position. This is nothing like the real hinge.



Underwing stores include drop tanks, AIM-9 Sidewinders, and bombs. The Sidewinders are too fat and are best replaced with those in the Testor-Italeri F-4E/G kit. Since many modelers will produce the aggressor aircraft, any other ordnance will be unnecessary. The drop tanks are good, but the bombs were humpbacked and unusable.

Testor's instructions are excellent, with Federal Standard 595 color information on the 3- or 4-view drawings of each camouflage scheme. The kit decals include Swiss and Royal Jordanian Air Force Tiger IIs and a "Top Gun" Navy aggressor. I used Microscale sheet No. 72-312 to make a U. S. A. F. "Snake" scheme aggressor.

The kit scales accurately with dimensions given in Bert Kinney's *F-5 in Detail and Scale*. An attractive model can be built in about ten hours and modelers with little experience should find the kit easy to build.

Paul Boyer



Kit: No. 354, Mirage 2000

Scale: 1/72

Manufacturer: Heller, distributed by Polk's Model Craft Hobbies Inc., 346 Bergen Ave., Jersey City, NJ 07304

Price: \$10.95.

THE MIRAGE 2000 is the latest delta-winged aircraft in the successful line from Dassault. Due to enter service with the French Air Force this year, the Mirage 2000 will replace aging Mirage IIIs still in service.

Heller's kit is the only 1/72 Mirage 2000 available so far. The kit contains 42 parts in gray and clear styrene. Surface detail is somewhat sparse and combines engraved and raised panel lines. The quality of the molding is average for a Heller kit; the wheels, afterburner, and intake strakes are nicely done. The fit, however, is below average.

I question Heller's decision on the loca-

tion of the seam joining the upper and lower wing halves. This seam does not correspond to any panel line and requires careful cleaning up. The fit of the wing and intake assemblies to the fuselage requires filling and sanding. I had to file a larger opening to get the afterburner section to fit into the fuselage, and I had to carefully sand the canopy to allow a good fit to the fuselage. The nosewheel didn't line up as it should but I left it alone rather than weaken it. My kit had sink marks on the wheels, missiles, and landing gear.

The canopy is attached to a large sprue so be careful when removing it. The kit can be assembled following the instructions, but I left off the easily broken parts until after the painting was finished.

I was disappointed with the kit's poor-fitting parts. Despite its shortcomings, the kit does build into a presentable model. I recommend it to modelers who have some experience building jets.

Dennis Moore



Paul A. Erler

Kit: No. 1020, Panhard 178 Armored Car

Scale: 1/35

Manufacturer: Air Press Models, available from The Arsenal, 1506 Lorraine Ave., Bellevue, NE 68005

Price: \$11.95.

THE PANHARD 178 has never been produced in an injection-molded kit, so this vacuum-formed example fills a gap in armored car collections. The kit is molded in .040" sheet styrene and includes 55 parts. The quality of the molding is average for a vacuum-formed kit, with recessed detail and raised rivets. Some of the detail was not well-formed. I modeled the 1935 turret version but an optional 1947 turret and railroad wheels are included.



Fit of the parts was rough. I trimmed the turret front and floor to fit them to the main turret, and I bent the hull and trimmed the hull floor to align them for cementing. I reinforced weak areas and small parts with epoxy putty. I thinned down the muzzle and the taillight shroud for better appearance.

The instructions include an accurate four-view drawing, parts diagram, detail sketches and an exploded-view to ease assembly. No decals are provided. The kit scales well with the Bellona Print No. 19, with the turret base a bit oversize. The completed model measures 6" x 2 1/2" x 2 1/2". It took 25 hours to complete the model, more than I spend on injection-molded kits. I recommend the kit to experienced armor builders who don't mind extra work.

David Schemel

ORIGINAL COLOR SLIDES

■ Hundreds of slides listed each month

■ All types of aircraft listed

■ Quality original slides

Send for most recent copy of **FREE** monthly list or send 50¢ for list & sample slide.

AERO RESEARCH

4672 Flamingo Park Ct. -B
Fremont, CA 94538



AVIASHOP

A NEW SERVICE FOR MODELERS!

FOR THE FIRST TIME THE FINEST OF FRENCH BOOKS ARE AVAILABLE FROM THEIR COUNTRY OF ORIGIN.

AVIATION BOOKS

DOCAVIA 6: LES AVIONS BREGUET 1940-1971

360 pages, 196 photos, 14 pages of color plates.
Full history of this famous french firm.....\$ 23.95

DOCAVIA 8: L'AVIATION REPUBLICAINE ESPAGNOLE 1936-1939

408 pages, 324 photos, 24 pages of color plates.
The Spanish Civil War as seen from the Republic side.....\$ 24.95

DOCAVIA 12: L'AVIATION FRANCAISE DE BOMBARDEMENT

400 pages, 292 photos, 8 pages of color plates.
Study of french bombers from 1918 to 1940.....\$ 27.95

DOCAVIA 15: LE FOCKE-WULF 190

408 pages, 563 photos, 16 pages of color plates.
Best to date study on this formidable fighter.....\$ 29.95

DOCAVIA 17: LES AVIONS DEWOTLINE

476 pages, 500 photos, 16 pages of color plates.
Complete coverage of all the Dewoitine aircrafts.....\$ 31.95



JOIN IPMS NOW

P.O. BOX 480
DENVER
CO. 80201



MIRAGE III, 5, 50

64 pages, 100 photos many in color
The story of the world's best known french jet fighter.....\$ 8.75

MYSTERE, FALCON

64 pages, 100 photos many in color
Pictorial survey on this famous bizz jet.....\$ 8.75

ARMOR BOOKS

LES VEHICULES BLINDES FRANCAIS 1900-1940

256 pages, 372 photos
Detailed history of the french armored vehicles.....\$ 28.95

LE G.M.C. : UN CAMION UNIVERSEL

256 pages, 400 photos, 15 pages of color
Describes all the versions of this ubiquitous truck.....\$ 28.95

DECALS

FRENCH ROUNDELS POST WWII ERA

181 high quality roundels designed to fit to almost every type of
french aircraft in 48 and 72 scales.....\$ 3.75

TO ORDER:

ALL PRICES ARE GIVEN HANDLING AND POSTAGE PREPAID.
NO ORDER UNDER \$15 PLEASE.
PAYMENT IN U.S. FUNDS ONLY WITH MONEY ORDER OR
PERSONAL CHECK.

WE CARRY ALSO: KITS, 1/43 SCALE CARS KITS.
FREE CATALOG ON REQUEST

AVIASHOP

B.P. 19, 14790 VERSOIN, FRANCE

THE MOST EXPENSIVE PHANTOM



Next to the 1:1 scale Phantoms flown by the Navy, Marines and Air Force, the MINICRAFT/HASEGAWA 1/48th scale F-4J is the most expensive model available.



When Hasegawa's management decided to proceed with the 1/48th scale Phantom kit, the engineers were given one primary set of instructions; "Don't compromise on detail or quality"... "Make it the best kit ever produced!" The engineers and toolmakers did exactly as instructed and the end results both in cost and quality are testimony to their mastery of "state of the art" kit technology. It is magnificent in every respect, but so is the price. At \$21.00 suggested retail it's the most expensive 1/48th scale kit around, by far, but when compared to the lesser offerings the value is there.

From the highly engraved instrument consoles, to the micro-thin crystal clear canopies, to the textured splitter plates or the wheel hubs, every part is better

and more detailed than ever seen before.

If you're going to devote a good many enjoyable and satisfying hours building the ultimate Phantom kit, doesn't it make good sense to start off with the best kit available? If you measure the cost of the kit against the pleasure, satisfaction and pride of ownership it can yield, then the initial cost is really most reasonable.

Our F-4J Phantom II is available now at selected hobby dealers everywhere. Soon our F-4B/N, F-4C/D and F-4E versions will also be available. For the first time a complete modelling history of the amazing F-4 Phantom family will be produced. Who else but Hasegawa would undertake such a program.

To learn more about the 308 kits in the Hasegawa line, send \$3.00 for our 53 page full color catalog:

MINICRAFT MODELS, INC.
P.O. Box 3577, Torrance, California 90510.



FINESCALE MODELER staff photos by
A. L. Schmidt and Paul A. Erler



Airliner decals

ATP Inc., 3014 Abelia Court, San Jose, CA 95121, has released a pair of 1/144 scale airliner decals. The two colorful sheets are AD5014 AirCal Boeing 737 and Douglas DC-9 Super 80, and AD5032 PEOPLEExpress 737. They are designed to fit the MPC/Airfix kits. Each sheet is \$3.00.



Robin Hood and Sherlock Holmes figures

Imrie/Risley Miniatures, Inc., P. O. Box 89, Burnt Hills, NY 12027, has released 54 mm cast metal figures of legendary Robin Hood and Sherlock Holmes characters. Robin Hood and his three Merry Men are available in set No. C-94 for \$24.00 or separately for \$5.95 each:

- C-95 Robin Hood
- C-96 Will Scarlet
- C-97 Little John
- C-98 Friar Tuck

Sherlock Holmes and Dr. Watson are accompanied by a snarling dog in the Hound of the Baskervilles Group (No. C-100) for \$14.95. Separate figures are available at \$5.95:

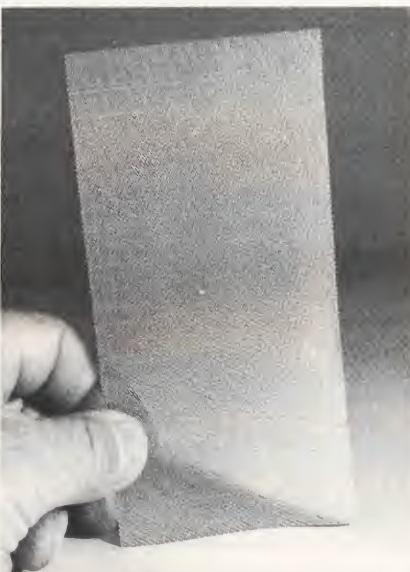
- C-101 Sherlock Holmes with pipe
- C-102 Dr. Watson with cane
- C-103 Professor Moriarty
- C-104 Inspector Lestrade

Pastel weathering set

Hobby Helpers, 1512 Balmoral Avenue, Westchester, IL 60153, offers the Chalk-Ez



Weathering Set consisting of ten individually boxed colored pastels, including six earth tones and four primary colors. The chalks can be mixed to create any color and are easily removed with water. The set retails for \$4.98.



Grille material

Scale Scenics, a division of Circuitron, P. O. Box 322, Riverside, IL 60546, offers "Micro Mesh," a nonwoven, raised diamond pattern mesh formed from .005" brass. The sheet measures 3" x 6" and costs \$2.95.

Brushes

The Testor Corporation, 620 Buckbee Street, Rockford, IL 61101, offers new paint-

brushes in the Model Master line. The line includes:

- No. 2 Golden Synthetic Round, \$2.50
- No. 0 Golden Synthetic Round, \$2.25
- $\frac{1}{4}$ " Golden Synthetic Chisel, \$3.60
- No. 2 Red Sable Round, \$2.75
- No. 000 Red Sable Round, \$2.25
- $\frac{3}{8}$ " Camel Hair Flat, \$1.60
- $\frac{1}{2}$ " Black Sable Flat, \$2.60



Liquid glue and masker

D. G. Modeling Products, 8080 Langdon Avenue, Van Nuys, CA 91406, produces SuperWeld and SuperMask in 2-ounce bottles. Quick-drying, nonflammable SuperWeld will bond styrene and acrylic plastics and costs \$1.75. SuperMask is a liquid masker that dries quickly and costs \$2.00.



Pocket pin vise

Davis Diesel Development, P. O. Box 141, Milford, CT 06460, offers a pocket drill set including an aluminum pin vise with a steel collet and pocket clip. Stored inside are 12 twist drills ranging from No. 50 to No. 70. Price of the pocket drill set (No. PDS-12) is \$10.00.



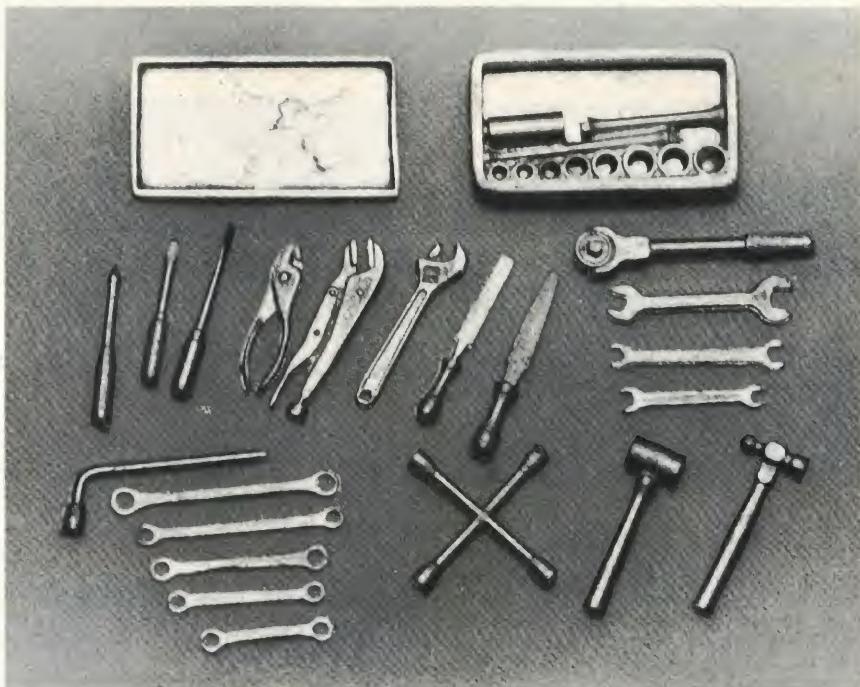


Flexible file

Creations Unlimited, 2939 Montreat Drive N. E., Grand Rapids, MI 49505, has released Flex-i-file, an aluminum frame holding a $\frac{1}{4}$ " abrasive Mylar strip. It can be used to sand in tight spots where sheets of sandpaper won't fit. Flex-i-file costs \$3.98 and includes six assorted abrasive strips. Refills (six strips) of either fine, medium, or coarse grits are available for \$1.00.

All-purpose hand chuck

General Tool makes a hand chuck that accepts drill sizes from $\frac{1}{4}$ " down to a No. 80 (shown) without changing collets. The chuck (No. 285-81) is available for \$4.95 from William K. Walthers, Inc., 5601 West Florist Avenue, Milwaukee, WI 53218.



1/24 scale tools

A set of cast metal tools in 1/24 scale is available from R & D Unique, 14430 31st Avenue South, Seattle, WA 98168. Curbside Dioramics No. RDA-2401 contains 23 pieces including screwdrivers, wrenches, pliers, and files. The set is priced at \$10.00.



SPECIAL FORCES - VIET NAM From BATTLELINE MINIATURES.



THE LATEST ADDITION TO OUR CONSTANTLY EXPANDING LINE OF 1:35 SCALE WHITE METAL FIGURES WHICH FAITHFULLY RECREATE THE COMBATANTS OF THE VIET NAM WAR AN ILLUSTRATED CATALOGUE OF OUR SIXTEEN USA, USMC, VC & NVA FIGURES AND M113 ACAV SHIELDS IS AVAILABLE FOR \$1.50.



PRICE: \$5.00 each
EACH FIGURE INCLUDES A "BOONIE" HAT ALLOWING EASY CONVERSION OF THE FIGURES TO "L.R.R.P.s" AND OTHER ELITE TROOPERS. BY COMBINING THIS HAT WITH OUR OTHER FIGURES AND THE NEW SPECIAL FORCES THE CONVERSION POSSIBILITIES ARE UNLIMITED.

SEND CHECK/MONEY ORDER TO:

GATEWAY HOBBIES, INC.
62 WEST 38TH STREET
NEW YORK CITY, NY 10018
TELEPHONE 212-221-0855

POSTAGE: 10% IN THE U.S.
30% OVERSEAS & CANADA.

PRECISION PAINTS FROM ENGLAND \$1.30 each. Catalogue listing available for \$1.00

<u>A-10</u>	M97. Medium Green FS34092
	M144 Dark Grey FS36081
<u>NATO</u>	M1 Dark Green
	M6 Dark Sea Grey
	M26 Light Aircraft Grey
<u>SEA HARRIER</u>	M28 Barley Grey

\$1.30 ea.

VICTOR M27 Hemp

M155	BLUE ANGELS BLUE FS15050
M109	INTERNATIONAL ORANGE FS12197
M162	FLUORESCENT YELLOW-ORANGE FS28915
M143	AIR SUPERIORITY BLUE FS35450

PRECISION PAINTS

NEXT
ISSUE

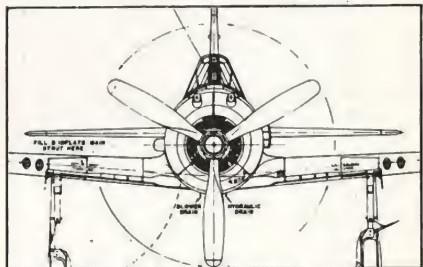
FEATURES



Acrylic paints for diorama water. FSM: A. L. Schmidt.

In Winter FSM, Joe Gianfrancesco starts with a Revell Albatros D-III and ends up with a 1/72 scale Albatros D-II. Along the way, Joe reveals his techniques for scratch-building replacement wings, detailing the engine, and simulating wood grain on the fuselage. You'll also find an in-depth look at decals and how to use them by FSM Associate Editor Paul Boyer, plus features on creating diorama water with acrylic paints, and photographing aircraft models—on a carrier deck of your own!

DATA/DRAWINGS



Vultee P-66 Vanguard drawings by Dick Gleason.

Winter FSM will feature detailed scale drawings of a rare warbird, the Vultee P-66 Vanguard. Accompanying the plans and photos of this aircraft you'll find a how-to-do-it article on modeling the P-66 in an unusual material.



FROM THE EDITOR

How much detail is enough? (with four good answers)

DETAILING IS THE THEME of this issue, and the mention of detailing always brings up an unanswerable question: How much detail is enough? It's altogether too easy to get bogged down in a superdetailing project, and what often happens is that you run out of enthusiasm before even a small part of the model is complete.

So, how much detail *is* enough?

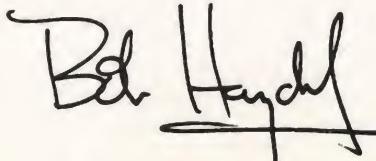
- *How about what comes in the box?* Heresy!, you say, especially in an issue of FSM dedicated to detailing! Well, not necessarily. I meet more and more modelers willing to admit they enjoy simply doing a clean job of assembling a kit, painting it (adequately, not magnificently), and adding the markings that came in the box. The end result is relaxation, which is why most of us picked up that first kit, anyway.

- *More detail than my last model.* As the years and the models go by, the fellow who subscribes to this approach becomes an increasingly tough act for himself to follow, but if you can limit yourself to adding just slightly more detail while you refine your techniques, this is a worthwhile strategy. FINESCALE MODELER is aimed squarely at modelers who want their next model to be better than their last, and my guess is that's most of you.

- *Everything—with a capital "E!"* This is the scariest answer of all. I'm hard-pressed to criticize a modeler who sets out to duplicate every feature of the real thing and succeeds, and the results never fail to amaze and inspire. I hasten to add that there are hundreds—maybe even thousands—of half-built (but fully detailed) models out there waiting for the builder to regenerate his enthusiasm. If you decide that "Everything" is your answer, you'd better be ready for the strain!

- *The absolute minimum.* This is also heresy, but sometimes less detail adds up to more. By employing tricks in finishing and presentation, talented modelers are often able to suggest and imply detail instead of modeling it. Viewers *imagine* detail—the model is more than literally meets the eye. Nothing intrigues me more than this sleight-of-hand modeling, and I hope to feature such techniques in future issues.

In the best of all possible worlds each of us would be able to decide exactly how much detail to add to each model, and we'd plan each project so as to complete the model an instant before losing interest in it. That's unlikely to happen, but it's worth keeping in mind as you jot down notes on detailing your next model.


Editor

**ALL IN
WINTER
FSM!**

Testing
the Legend



Photos on the *Car and Driver* pages behind the model are ©1983 by Al Satterwhite.

FSM SHOWCASE

Jeff Luser's 1/16 scale Shelby Cobra

JEFF LUSER is no stranger to fast sports cars. He has driven an E production Alfa Romeo Spider in Sports Car Club of America road races for the last two years, following his father's love for the sport. Jeff attends the Colo-

rado Institute of Art and has been modeling for 14 years. He told FSM how he modeled the legendary Cobra.

"Carroll Shelby's Cobra set the pace in the GT classes in racing circles in the late sixties. I have always liked the

car, so I just had to build a model of it. Owning a real one is a dream that is a little out of reach right now.

"I enjoyed reading an article in the April 1981 issue of *Car and Driver* magazine. The Cobra's racing record



Jeff's project was inspired by a colorful article in *Car and Driver*. He modified MPC's 1/16 scale Shelby Cobra only slightly and added details to make the kit more closely match the car in the photos.



Ford's 427-cubic-inch V-8 gave the Cobra acceleration unmatched in its day. Added details here include radiator hoses, the fuel line, and ignition wires.



All model photos, FINESCALE MODELER: A. L. Schmidt

The Cobra interior was a basic, no-nonsense cockpit. Jeff added cloth seat belts detailed with the kit's buckles.

was astounding in the days when the Ferrari was the car to beat. Although the Cobra was by no means a good-handling car, its power-to-weight ratio made for quick acceleration and a top speed of 162 mph. And the Cobra was street-legal!

"I modified MPC's 1/16 scale kit to represent the Cobra featured in the *Car and Driver* article. I replaced the

side-mounted mufflers with copper tubing. The kit engine was nicely detailed, but I added ignition wires made of thread and the radiator hoses and fuel line from a Formula 1 car kit. I substituted some scrap cloth for the seat belts but used the kit buckles.

"I hand painted the interior and engine compartment black, with white, yellow, red, and silver details. The en-

gine block was painted dark blue. The exterior was painted with a spray can of Ford Red auto paint. I hand painted the '427' insignia above the front louvers and added the kit's decal license plate.

"Since I had an extra copy of the *Car and Driver* article, I took out the lead spread and mounted it on foam-core illustration board to make a simple but unusual display base."

FSM



The angular lines of the Phantom II are most evident in this head-on shot. Roger added tiny rearview mirrors from plated acetate.

All photos, FINESCALE MODELER: Paul Boyer unless otherwise credited.

Superdetailing Testor's 1/48 F-4E Phantom II

A shark-mouthed MiG killer in Vietnam-era dress

BY ROGER JACKSON

ALTHOUGH there have been a number of accolades bestowed upon the McDonnell Douglas F-4 Phantom II, one thing is certain: It was the most significant fighter aircraft of its time. The Phantom II first flew in 1958 and soon proved its superiority over contemporary designs. It has dominated the fighter aircraft scene to the point where it has flown in 11 foreign air arms as well as being front line equipment for all the U. S. services.

The past few years have seen a flood of F-4 kits released by the model manufacturers, with more expected in the near future. The kits released thus far feature varying degrees of detail, accuracy of scale, and proportion.

I selected the Testor 1/48 F-4E/G (kit No. 583) for this project. Several other kits provided detail parts which were not included in the Testor kit. This way

I was able to select the finest components available, reducing the number of scratchbuilt items to a minimum.

I began by taping the major airframe parts together with masking tape. This allowed me to critique the model and note the various areas which would require attention.

Detailing the cockpit. Since it has much better detail, I installed the cockpit interior and seats from the Monogram F-4C/D into the assembled fuselage halves. I added details such as throttles, new CRT shroud for the rear panel, and replaced the pull rings on the ejection seats. An M. V. Products* green marker lens was installed in the front panel to simulate the pilot's radar screen, Figs. 1 and 2.

Modifying the wing. Since I was building a Vietnam War F-4E, the slats on the Testor kit would have to go since they were added after the war.

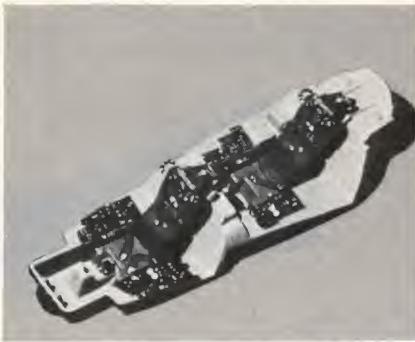
*M. V. Products, P. O. Box 6622, Orange, CA 92667.

The unslatted upper wing panels from the Testor RF-4C (kit No. 582) fit the lower wing assembly without modification. The holes for the slat actuators on the lower inboard panels were filled in and sanded smooth. I made the wingtip navigation lights from tinted plexiglass and the formation lights from yellow scrap sprue. I made the fuel system purge vents from sheet styrene and attached them to the trailing edge near the wing fold line. The fit of the wing to the fuselage was nearly perfect.

Intakes. The intake ramps, parts Nos. 22 and 24, have a rectangular depression molded on the back side which is not on the real aircraft. I filled the depression with a small rectangle of sheet styrene and faired it in with Hot Stuff Super T. The intakes were then assembled, attached to the fuselage and faired in. I used Hot Stuff adhesive exclusively to construct this model because of its strength and its capability to bond styrene to dissimilar materials such as aluminum.

Fuselage details. The pitot tube was made from a broken No. 77 drill bit inserted into a No. 20 transfusion needle. I inserted this combination into a $\frac{1}{2}$ " length of $\frac{1}{16}$ " K & S tubing faired into the tip of the radome. The outside diameter of the No. 20 needle matched the inside diameter of the tube.

The oval-shaped cannon port was drilled out and the gas purge vents on the ventral side of the gun fairing were



Bob Wheeler

Fig. 1. Roger used the 1/48 scale Monogram F-4C/D cockpit with added details of wire, stretched sprue, and a miniature lens for the radar screen. Monogram's cockpit fits into the Testor kit with slight modification.



Fig. 2. The completed cockpit installed in the Testor kit. The lens mounted behind the cockpit represents the aerial refueling floodlight. Note the rain remover nozzle forward of the windscreens.

added using stainless steel photo-etched air intake grille from Detail Associates,* Fig. 3. This grille is ideal for aircraft model louvers. Most model railroad shops stock these items.

The equipment bay cooling ducts, parts Nos. 20 and 26, were attached to the forward fuselage. A moderate amount of filling was needed to properly blend these parts to the airframe. I used masking tape to protect the recess at the front of the duct while sanding and shaping. I used a jeweler's file to cut a slot for the nozzle of the rain remover immediately forward of the windscreen, Fig. 2.

Moving aft. I removed the wedge-shaped panels from the upper surfaces of the stabilators. This was a retrofitted item installed in late 1972 and

*Detail Associates, P. O. Box 197, Santa Maria, CA 93456.



The business end of the F-4E. Combat experience in Vietnam brought about the addition of the M61 Vulcan 20 mm cannon in the nose of the Phantom II.



Roger's superdetailed F-4E stands ready for a MiG CAP (MiG Combat Air Patrol) mission. The scratchbuilt boarding ladder adds a touch of realism.

was not present on this particular plane during the Vietnam War. I used a small jeweler's file to open the rudder APU exhaust outlets next to the tip of the arresting hook. I discarded the kit-supplied arresting hook in favor of one taken from the Monogram kit. I installed it with a hinge made from .040" sheet styrene and 1/16" K & S aluminum tubing, Fig. 4.

There is a small gauge behind a square window on the right side of the aft fuselage. I reproduced it by installing a small square peg of clear sprue that was sanded and polished on both sides. I then used a decal cut from an instrument panel and applied it to the back side of the window, Fig. 5.

The sheet metal shrouds over the ex-

haust pipes are poorly represented in the kit. I made improved ones from sheet styrene and faired them in, Figs. 4 and 5.

The clear sprue navigation light was added to the end of the fin cap and a small chunk of red-tinted plexiglass was fitted to the leading edge of the fin for the anti-collision beacon, Fig. 6.

Also on the leading edge of the fin is the sensor for the stability augmentation system. I notched the fin and installed a 1/2" length of K & S 1/16" aluminum tubing and faired it flush with the leading edge. The sensor itself is a 3/4" length of steel tubing from a powdered graphite dispenser. This smaller tube fits right into the larger tube in the leading edge. This technique avoids the



Fig. 3. The busy underside of the nose. Note the grille underneath the sharkmouth. ECM pods came from Monogram's F-4C/D.



Fig. 5. The completed aft end. Note the rudder APU exhaust nozzles, hinged tail hook, and the small gauge just above the exhaust nozzle. Roger modified the exhaust shroud and added a grille.

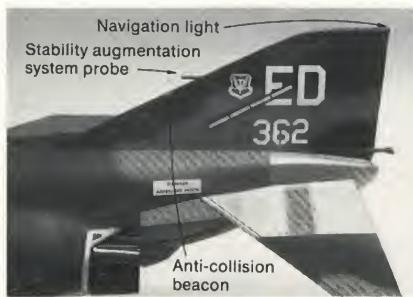


Fig. 6. A piece of red plexiglass was used for the formation light just below the probe on the leading edge of the fin. Clear plexiglass was used for the light at the tip. The probe is made from the tube of a graphite dispenser.



Bob Wheeler

Fig. 4. Added details to the aft end can be seen here before painting. Roger used aluminum tubing for many of the extras.



Fig. 7. Roger reconstructed the nose gear and added details from solder and sprue. Note the "remove before flight" tags and slightly flattened tires.

chronically weak attachment of these fragile pieces, and prevents them from breaking off, Figs. 4 and 6.

The fuel dump at the base of the rudder was scratchbuilt from various sizes of K & S tubing and brass wire. I inserted it into a notch and carefully blended it in to the proper contour, Figs. 4 and 6.

Canopy. The windscreens and canopy bridge sections were installed and faired in with Hot Stuff. I then polished them with Bare Metal Plastic Polish.* The hinges on both kit-furnished canopies were incorrect, so I replaced them with new ones made from .030" sheet styrene.

After they were painted, I detailed the canopies with rearview mirrors made from plated acetate, made actuators from aluminum tubing and steel wire, and added heater-defroster cables made from tightly coiled copper wire.

Landing gear. The nose gear retraction jack was removed and a new one built from aluminum tubing. I used small-diameter solder for the hydraulic lines. I resculpted the drag link and

drilled lightening holes on the top and bottom sections. The nosewheel trunion mount was also reshaped for a more realistic appearance. I used the nosewheels from the Monogram kit as they have a more accurate hub, Fig. 7.

The mount for the landing and taxi lights was scratchbuilt from .010" sheet styrene, aluminum tubing, and brass wire. M. V. Products clear marker lenses were used for the lights. I used white glue to attach them since they weigh next to nothing and no real stress would be put on them. When the model was finished, I attached the gear struts, carefully aligning them so that the proper stance was assured.

Add-ons. The tacan blade behind the refueling receptacle and the UHF blade on the large nosewheel door are .010" strips of styrene inserted into small rectangular holes cut with an X-acto knife.

I added sway braces to the outboard pylons and small fins to the center line tank. The inboard pylons, rails for the Sidewinder missiles, ECM pods, and AIM-7 Sparrows are from the Monogram kit. Some modification was necessary to fit the pylons to the Testor

model. The AIM-9 Sidewinders are from the Monogram F-5E, Fig. 8.

Research found a striking color scheme. While I was building the model, I began research for a suitable color scheme. I wanted the sharkmouth insignia and multiple MiG kills if possible. I obtained the USAF's official list of confirmed kills claimed during the Vietnam War which revealed a double kill on July 8, 1972. On that day, Captain Steve Ritchie and Captain Chuck DeBellevue downed two MiG-21s while flying an F-4E-36-MC, serial number 67-0362. A color plate of this aircraft appears in the Squadron/Signal book *... And Kill MiGs*, by Lou Drendel. Since I had found what I was looking for, I proceeded with painting and decaling.

The entire model was sanded, polished, and inspected for flaws. This process was repeated until the surface was ready to paint. Surface detail was restored with a No. 11 X-acto blade. I used masking tape to lay out the panels and serve as a guide for the knife.

I primed the model with Testor's Flat White and used Pactra paints mixed to match FS 595a color chips for the cam-

*Bare Metal Foil, 19419 Ingram, Livonia, MI 48152.

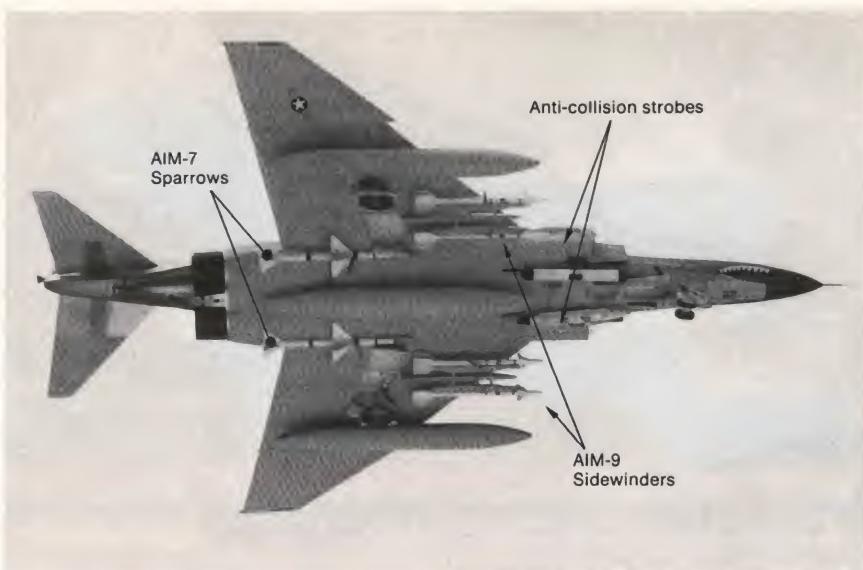


Fig. 8. The mixed air-to-air weapons load typical of missions flown over North Vietnam. The two AIM-7 Sparrows in the rear fuselage bays are radar guided while the four AIM-9 Sidewinders are heat-seeking missiles. Note the lenses of the anti-collision strobes under the intakes.

oufage. I used Spray 'n' Plate* on the bare-metal areas. Powdered graphite applied with a cotton swab was used to tint the various panels commonly seen on F-4s. I used Testor's Gloss Black for the radome, cannon muzzle fairing, and ranging antenna on the inboard, leading edge flap of the wings. I painted Testor's No. 1111 Blue on the fin cap and canopy rails. Next, I sprayed four coats of Micro Coat Gloss decal primer and allowed the model to dry for a week.

Decaling the model proved to be the most tedious operation of the project. There are over 850 individual decal pieces, Fig. 9. The heavily glossed finish kept silvering to a minimum. All of the decals I used are available from Microscale and Scalemaster with the exception of the stenciled names on the canopy rails which were taken from a Microscale commemorative sheet issued at the 1978 IPMS national convention in Atlanta. After all the decal work was completed I gave the model two coats of Advance Products Full Matt Finish and again set it aside to dry.

Prior to the installation of the canopies, silver Scalemaster decal stripe was used to line all of the canopy glass including the panels of the windscreens. This appears to be a complex task but it is actually quite simple. I used a set of engineer's dividers to transfer the dimensions directly from the model to the stripe sheet and then cut the stripes out with scissors. A decal setting solution helps the decals bend on the curves. The entire operation took approximately one hour.

I used Testor's Gloss White and var-



Fig. 10. Intake covers were made from sheet plastic with wire handles. The covers are held in place with Micro Liqui-tape for easy removal.

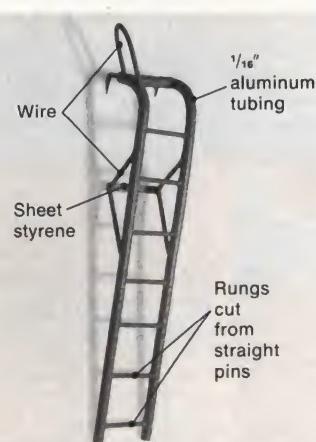


Fig. 11. Roger built the boarding ladder from aluminum tubing, straight pins, wire, and sheet plastic.

ious colors of Scalemaster decal stripes on the missiles and ECM pods. I attached these, the landing gear doors, and the fuel tanks with Hot Stuff.

More details. I made anti-collision strobe lights by placing clear M. V. marker lenses into depressions drilled into the bottom of the intakes, Fig. 8. I



Fig. 9. This shows just a small number of over 800 decals applied to this model. Even the missiles have serial numbers.



Meet Roger Jackson

Formerly from the metropolitan Washington, D. C., area, Roger now resides in Paso Robles, California, where he is attending college. He is a veteran of the U. S. Air Force and his modeling interests include modern U. S. Air Force and U. S. Navy combat aircraft with a special interest in the aircraft of the Vietnam era. At age 31, he writes that he has been modeling for over 25 years.

Roger also enjoys the research involved with his modeling projects. "Research, research, research!" is his usual answer when asked a question concerning improving one's modeling technique. "Unless you have the real McCoy parked in your backyard to inspect, and measure at your leisure, you need more than a couple of books or magazine articles for reference."

He sends a special thanks to Bob Wheeler and Sgt. Craig Baumer of the Maryland Air National Guard and to TSgt. Frank MacSorley Jr. of the D. C. Air National Guard for their assistance with this project.

[Editor's note: Roger's right about research. While trying to come up with a photo of the real ED-362, FSM wrote to artist Lou Drendel, who painted the illustration Roger based his markings on. Lou wrote to FSM: "In 1978 I interviewed Steve Ritchie, and... firmly established that the airplane did not have a sharkmouth. If we ever update ... And Kill MiGs,' we will correct the markings error.' All that notwithstanding, Roger's superb Phantom II is a striking aircraft in its own right. — Bob Hayden]

*Advance Products, available from Brookhurst Hobbies, 12741 Brookhurst Way, Garden Grove, CA 92640.



United States Air Force

Captain Richard "Steve" Ritchie just after becoming the U. S. Air Force's first ace of the Vietnam War. Ritchie scored his other three victories in this aircraft, an F-4D.

placed another lens immediately aft of the rear cockpit for the aerial refueling floodlight, Fig. 2.

The intake covers were scratchbuilt from sheet styrene with brass wire handles, Fig. 10. I made the boarding ladder from $\frac{1}{16}$ " tubing and straight pins cut to length for the rungs, Fig. 11. The "remove before flight" flags were made by using decals from the Monogram F-15 kit applied to red-painted aluminum foil and attached with white glue. The foil allows wrinkling and creasing the flags to make them look



Roger spent over 300 hours on this prizewinning model. Clearly, the results more than justify his extra effort to make the Phantom II truly superdetailed.

like their full-size canvas counterparts.

I installed the canopies with Micro Liqui-tape. This makes them easy to remove for cleaning and also minimizes damage during transit.

I put 300 hours into this project and the end result was well worth the work involved.

FSM

REFERENCES

- *Aces and Aerial Victories*, U. S. Government Printing Office, 1976.
- Drendel, Lou, ... And Kill MiGs,

Squadron/Signal Publications, Carrollton, Texas, 1974.

- Drendel, Lou, *Phantom II: A Pictorial History*, Squadron/Signal Publications, Carrollton, Texas, 1977.
- F-4E Phantom II Drawing Set, DS-48-15, Detail & Scale, Inc.
- *Famous Airplanes of the World No. 118, F-4E/F/G*, Bunrin-Do Publications.
- Kinzey, Bert, *F-4 Phantom II In Detail & Scale*, Aero Publishers, Inc., 1982.
- *Koku-Fan Illustrated No. 3, F-4 Phantom II*, Bunrin-Do Publications.

MILITARY AVIATION HISTORY ON HOME VIDEO CASSETTES

These exciting documentaries, originally produced by the U.S. Government, depict military aviation as it has matured through two World Wars. Some of the finest air combat footage ever filmed.



**Classic Aviation Battle Films
Custom-Transferred to Your Choice of VHS or Beta
BUILD YOUR AVIATION VIDEO LIBRARY NOW**

**ORDER TOLL-FREE—24-HOUR HOT-LINE
1-(800) 854-2003, Ext. 905**

In Calif. 1-(800) 522-1500, Ext. 905

U.S. & Canada add \$2.50 shipping. Other foreign orders add \$5.00. CA Res. add 6 1/4% Sales Tax.
SPECIFY BETA OR VHS/Visa & Master include Number & Expir.

Send to: ARP CO. DEPT. FS 3349 Cahuenga Blvd., West, Suite 8-A, Hollywood, CA 90068

**SPECIAL INTRODUCTORY OFFER:
ORDER ALL 3 PROGRAMS AND SAVE 10%
Regular Price *\$239.85 Introductory Special *\$215.86**

These programs combine from two to five films onto a single cassette. Our prices represent savings of hundreds of dollars compared to the cost of the individual films.

The Air Force Story, Vol. 1

From the beginning with the Wrights through 1937. The Lafayette Escadrille in action; the Army flies the Air Mail; military vs. civilian speed records; Billy Mitchell sinks battleship round-the-world flights; the B-9 and the P-26; the Army flies seaplanes; birth of B-17.

AF-1 Time: 70 min.

\$79.95

Battle of Britain, Parts I and II

Hitler's plan to kill Britain did not take into account the spirit of the people. Spitfires, outnumbered in the air, defeat the Luftwaffe. London fire-bombed on Christmas 1940—greatest fire in recorded history. Britain's finest hour recorded in this struggle to survive.

Memphis Belle

The story in full color of a B-17, a true fighting lady of the 8th Air Force, part of a mass bombing raid against the submarine pens of Wilhelmshaven—1,000 planes and 8,000 men in aerial combat. All combat footage shot over enemy territory.

BA-1 Time: 92 min.

\$79.95

Fury in the Pacific

Graphic action of the amphibious assault against Peleliu, a combined action of Navy and Marines with air support. Nine cameramen fell as this film was made.

The Fleet That Came To Stay

The invasion of Okinawa with aircraft action from B-29s to carrier attack planes. Japanese Kamikaze pilots fly against deadly anti-aircraft fire. Some of the best air combat footage ever recorded of our Naval Aviators in action.

Battle of Midway

An award-winner by Commander John Ford, who was wounded while filming on the sands of Midway. A film made in desperation during one of our nation's darkest hours.

BA-2 Time: 60 min.

\$79.95

Tools No Hobbyist Should Be Without

This Month's Special!

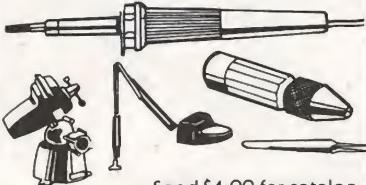
Weller
Mini-Shop Kit

620K A beginner's complete workshop!

\$32.95



Calif. Residents
Add 6% Sales Tax



Send \$1.00 for catalog
showing hundreds of items.

Tools For Hobbys
P.O. Box 5438
N. Hollywood, CA 91616-5438

Museum Quality Miniatures



Creators of historical miniatures for museum and collectors for over 30 years. Look for our "Ragtag Drummerboy" at your local hobby supplier. Our complete Catalog 151, fully illustrated with photos of our 54 mm and 76 mm kits, is available direct from us for \$3.00.

I/R MINIATURES, INC.
P.O. BOX 89, Dept. M
Burnt Hills, NY 12027, U.S.A.



Air Apaches



Navy Phantom
Overall 16" x 20"

**Full Color Prints
— \$30.00 Each —**
IL Residents Add 5% Sales Tax
Send Check Or Money Order To:
HUGH'S AVIATION PRINTS
9W. Beach Ave., Chicago, IL 60651
(312) 772-7683

Illustrations by

High Polder

Before You Start, Plan Your Finish

With The New Floquil Military Color Series

The hours you spend making your model authentically accurate are finalized when you apply the finish. Be sure your hours of attention become years of triumph by selecting the best finish available.

With the New Floquil Military Color Series, you'll discover not only a broad selection of general purpose and weathering colors—but also authentically matched United States and German WWII Colors plus a range of 26 of the most needed Federal Standard 595A Colors.

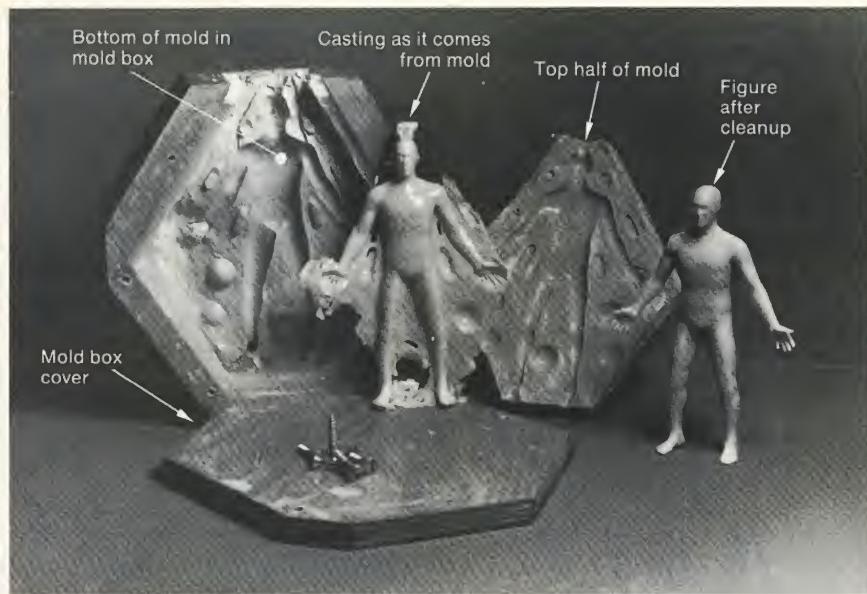
This revolutionary new series comes with all the built-in qualities you've come to expect from Floquil. Smooth, easy application by brush or airbrush; permanent, skin tight adhesion that enhances detail, and precision of color you can rely on.

The New Floquil Military Color Series—unparalleled quality; unsurpassed performance and... the best value. Ask for them at your favorite dealer and use them on your next project. From start to finish... you'll see the difference!



Floquil-Polly S Color Corp.
Route 30N
Amsterdam, N.Y. 12010
An  Company

For complete information send SASE. Include \$1.50 for color chart with actual chips.



Because his thin mold for this unclothed 1/12 scale figure distorted during casting, the author built a wood mold box and suspended the mold in it with wax.

An easy solution to a tough casting problem

The secret weapon is paraffin wax

BY JOHN LYNN

TODAY'S EXOTIC chemical compounds, among them plastic resins and RTV (room temperature vulcanizing) silicone rubbers, make home casting easier than ever before. Without using a centrifuge or elaborate vacuum equipment these relatively inexpensive materials can produce castings that rival the quality of many commercial offerings.

For several years I have enjoyed great success casting parts from a resin called Monzini Carazini in molds made

from General Electric RTV 31 or RTV 700. Recently, while molding an unclothed figure to serve as the basis for a variety of original 1/12 scale military miniatures, I ran into a minor problem. The solution turned out to be simple—and a lot less expensive than making a new mold—so I'm passing the technique along here in hopes that it might help solve similar problems for other modelers.

The problem: mold distortion. In this case I had used RTV 700, which is softer and more flexible than RTV 31, to make a two-part mold. The mold leaked badly at the joint between the mold halves, and when I pressed the halves together with enough force to stop the resin from seeping out, the mold compressed and collapsed and the resulting casting was badly distorted—it looked more like a skeleton than a robust soldier.

I could have poured a new, thicker mold from the stiffer RTV 31, but doing so would have been time-consuming (and expensive, RTV costs about \$20.00 a pound). The only way to derive acceptable castings from the existing mold was to work out a way to hold the halves together and seal the seam between them without using pressure. Resolved to make the best of a bad situation, I finally found a way to make

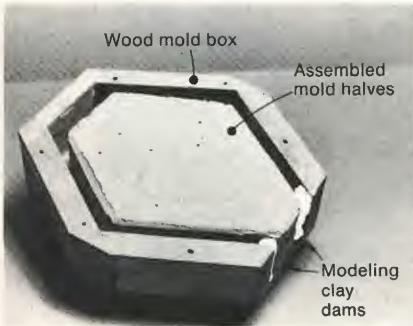


Fig. 2. After dripping melted paraffin along the seam of the mold (top) the mold is placed in the mold box and paraffin is poured into the space between the mold and the sides of the box (above).



Figs. 2 and 3. After dripping melted paraffin along the seam of the mold (top) the mold is placed in the mold box and paraffin is poured into the space between the mold and the sides of the box (above).

perfect, undistorted castings from the troublesome mold.

The solution: suspending the mold in wax. I first constructed a hexagonal mold box with a cavity approximately $\frac{1}{16}$ " less deep than the thickness of the assembled mold and wide enough to leave $\frac{1}{2}$ " to $\frac{3}{4}$ " clearance between the sides and the edges of the mold, Fig. 1. The box is made from scraps of lumber with a plywood top and bottom. Six screws fasten the top to the rest of the box, making it removable, and one end of the box is left open for pouring the casting resin into the mold.

To prepare the mold for casting I sealed the seam between the halves by dripping melted paraffin wax (you'll find it in a crafts store with the candle-making materials, or in the canning supplies section of your supermarket) along the crack, Fig. 2. Next I placed the mold in the mold box and blocked the spaces between the mold and the wood at the pouring end with modeling clay, Fig. 1. Then I poured hot paraffin all around the mold while pressing down lightly on the top half to make sure the halves were aligned correctly and that no wax flowed into the mold cavity, Fig. 3.

After the wax solidified I trimmed away the excess with a knife so the top of the mold box would fit snugly, Fig. 4.



The paraffin holds the two halves of the mold in proper alignment and effectively seals the seam between them without the need for any pressure. However, I found I could not rely on the wax alone to keep the halves of the mold from separating; I had to screw on the top of the mold box to hold the mold halves together, Fig. 5. (When I tried making a casting without the top the resin forced the mold apart, leaving me with a terrible mess.)

Once the mold and mold box are set up you can make several castings without having to redo the wax seal. Remove the screws, lift off the mold box cover, and carefully remove only the top half of the mold to take out the cured casting, then replace the mold half, screw down the box top, and pour again.

The technique of suspending a mold in wax can also be applied to damaged molds or to irregularly shaped molds which would be awkward to clamp together. Having this simple trick up your sleeve may mean you'll be able to derive usable castings from molds that you'd otherwise have to discard. **FSM**

MOLDING AND CASTING MATERIALS

Monzini Carazini Liquid Casting Compound (\$12.50 per gallon, plus shipping)

Adhesive Products Corporation
16660 Boone Avenue
Bronx, NY 10460

General Electric RTV 31 and RTV 700 rubbers (\$22.00 per 1-pound kit)

General Electric Silicones
RR 4, Waterford, NY 12188

(Will provide name and address of your local General Electric Silicones distributor. Upon request, your local distributor will send a copy of General Electric publication S-45A, "The Moldmakers.")

Figs. 4 and 5. (Above) After the wax around the mold cools and hardens excess wax must be trimmed away so the mold box cover will fit. **(Below)** Pouring Monzini casting resin into the assembled mold and mold box.



A finished 1/12 scale revolutionary soldier of the French 49th Regiment, 1791, built from the unclothed figure casting. After repositioning the limbs on the torso the figure was clothed and painted.

FREE back issue when you send \$1 for catalog describing the **Weapons and Warfare Specials** now available and in production, including the NEW magazine-format booklet series wherein a specific topic such as a specific war, or theater, or a single nation's military aircraft, vehicles/AFVs, or naval vessels are covered in its own multi-volume series. Over 30 different series are in preparation. Each volume consists of a min. of 40pp (8½" x 11") with no advertising, just page after page of hard data, informative reading, and plenty of illustrations, for only \$3.95 ea. (plus shipping).

Weapons and Warfare Newsletter is the new bi-weekly military/hobbyist news & review publication—will keep you abreast of everything that's important to know about. 25 issues a yr., \$10 (U.S.).

The **Military Hobby Advertiser** is for you to buy/sell/trade with 1000's of other hobbyists. Inexpensive ad space; lifetime subscription only \$1.00!

Find out about all of these publications and more by sending for current catalog. Additional FREE gifts and GIVEAWAYS also available!

International Graphics Corp.
218-FS4 Beech, Bennington VT 05201

THE CARD MODEL — Old fashioned? Yes. But a creative anachronism. The basic technique, formed and folded paper card stock, is hundreds, maybe thousands of years old. But it also mirrors space age fabricating processes. And card modeling will introduce you to the world of scratch-building in many materials. For example, build one of our kits in card stock. Then, using supplied patterns, build it again in



sheet metal, plastic or plywood. Next, design your own patterns for any static display or working model.

We offer the GA-36 (\$3.95),
XB-70 (\$5.95), P-66 (\$5.50),
Hughes Racer (\$4.95), all ppd.
Our complete, illustrated
catalog with plans and latest
releases, 25c.

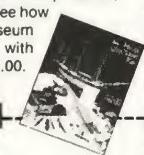
META MODEL
P.O. BOX 221
BATAVIA, N.Y.
14020



The secret's in our kits—imported from Europe—where these historic ship models are hand-crafted in walnut and rich woods by some of the finest model makers in the world. Solid brass, cast bronze and detailed wood fittings are used throughout. The hard work is done for you—most parts are pre-cut. Assembly is simple as you follow step-by-step instructions and large scale plans. Everything you need to complete is included, and we guarantee satisfaction.

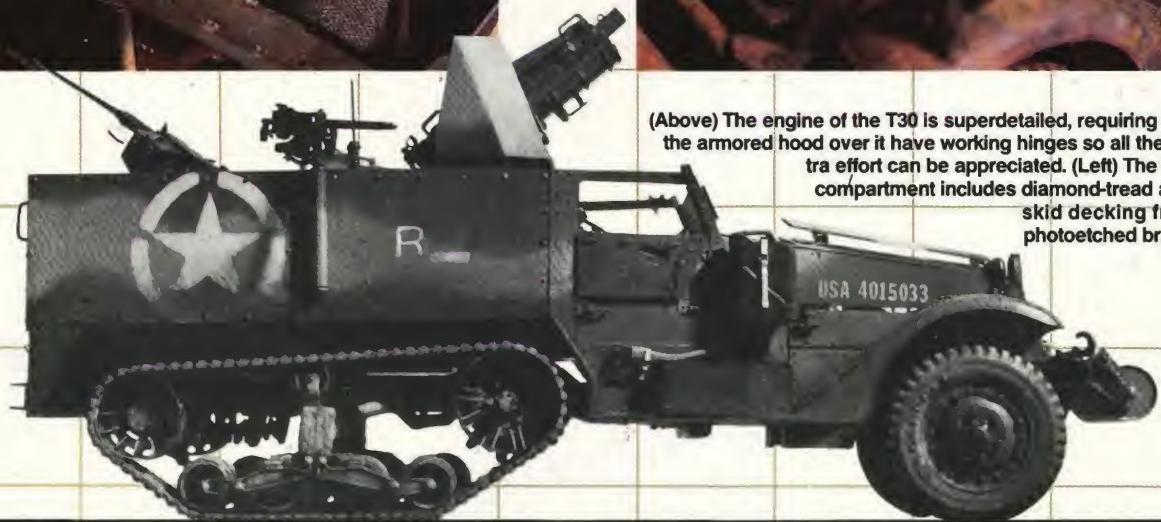
Even if you have never built a ship before, send for our full-color catalog. See how easy it can be to build a museum quality model you will display with pride in home or office. Only \$3.00.

Mail This Coupon Today!



MODEL EXPO, INC.
23 Just Road, Fairfield, N.J. 07006 Dept. FSM-83A
Please send full-color catalog: \$3.00 enclosed.

Name _____
Address _____
City _____ State _____ Zip _____



(Above) The engine of the T30 is superdetailed, requiring that the armored hood over it have working hinges so all the extra effort can be appreciated. (Left) The gun compartment includes diamond-tread anti-skid decking from photoetched brass.

Superdetailing armor models

Three techniques that may be new to you, including how to use photoetched metal parts

The author's 1/35 scale T30 75 mm howitzer motor carriage is a conversion based on Tamiya's M3 half-track. The model includes photoetched brass parts, scale working hinges, and rivets made using the techniques in this article.



A MAJOR PROBLEM in advanced armor modeling, whether you're working on extensive kit conversions or scratchbuilt vehicles with some kit parts, is detailing the home-fabricated sections of your model to match the finely detailed appearance of the kit portions. Let's face it, Italeri, Tamiya, and some of the other manufacturers are no slouches when it comes to surface detail on their armor kits, and it's always a challenge to make sure no one can tell where their efforts end and your own begin.

I ran into this kind of detailing problem while working on a 1/35 scale T30 75 mm howitzer motor carriage conversion based on the Tamiya M3 half-track. Instead of covering the entire conversion, this article will describe the techniques used to overcome the problems, which were developing finer drive sprockets and idler wheels, making working scale hinges, and finding a way to mass-produce convincing rivets.

Using photoetched brass parts. One feature of the Tamiya M3 half-track kit that has always bothered me is the relative crudity of the drive sprocket and idler wheels compared to the rest of the kit. On the real vehicle, Fig. 1, these wheels are extremely delicate and complex, and molding them exactly to scale would be next to impossible. I had considered various ways to correct the kit wheels, but could not find a satisfactory method until I learned of photoetching.

Railroad modelers and aircraft modelers have been using photoetching techniques for years to fabricate small, delicate pieces that would be difficult or impossible to make using sheet styrene, and to make many identical small parts. Many of these parts are available commercially, such as the brass locomotive cooling fan grilles from Detail Associates (which are handy for armor modeling), and the tiny seat belt buckles produced by Waldron for aircraft modelers.

It's also possible to have photoetched parts made to order. Fotocut, Box 120, Erieville, NY 13061, is run by Fred Hultberg, who specializes in providing custom photoetching services to modelers. Any modeler who can provide Fotocut with finished, flat artwork of the parts he needs can have the parts made in brass. The process is by no means inexpensive — prices vary depending upon the thickness and overall size of the parts, and on the number to be made — but to my way of thinking the service is not overpriced.

Preparing artwork for photoetching. The first step in having photoetched parts made is drawing accurate artwork. Whatever is black on the artwork will be reproduced in brass; what-



Fig. 1. A close-up of an M3 half-track suspension, showing the intricacy of the suspension elements, especially the drive sprocket (left) and idler wheel (right).

ever is not black will be eaten away during etching. Anyone who is thinking of photoetching his own parts should purchase a copy of Fotocut's pamphlet, "Drawings for Photo-Etching" (\$4.00), which is a comprehensive explanation of the requirements for suitable artwork.

The artwork must be done in black ink, and must be extremely sharp and clean, which means using a quality technical drafting pen such as a Castell TG or Rapidograph. I use a Castell

TGH with a No. 0 or 00 tip depending on how fine the lines in the artwork must be. It is also important to draw on a quality, hard-surfaced illustration board or technical tracing paper so that the ink doesn't bleed or blot. Finally, you must use opaque black ink. I use Pelikan No. 50 Black-Special, but there are several other good inks formulated for technical pens. I prepare the artwork in rough pencil form first to check dimensions and such, then make a final clean inking.

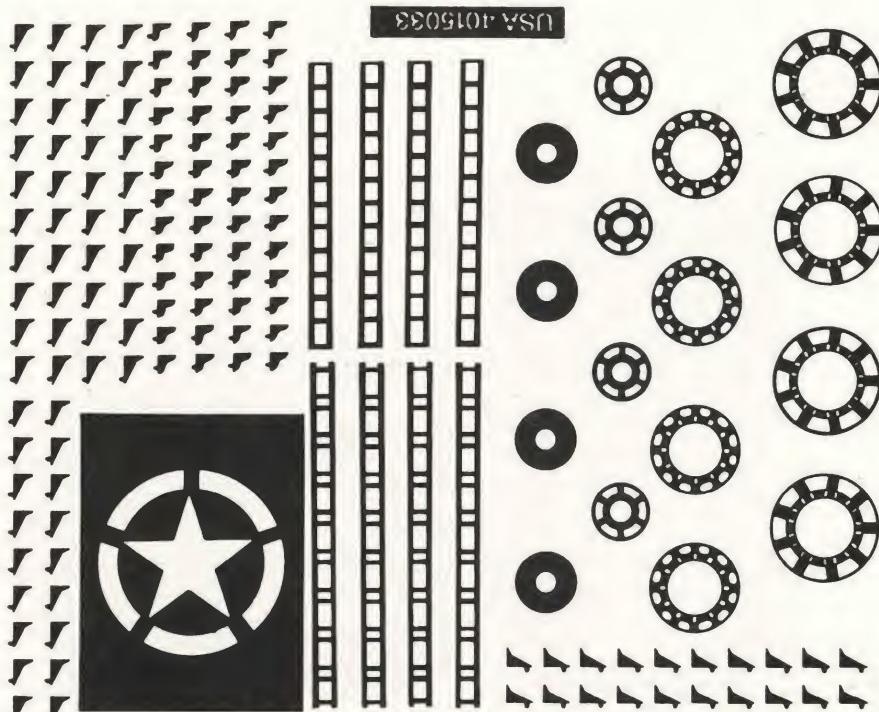


Fig. 2. This is the artwork for 1/35 scale half-track idler and drive sprocket wheels. Steve's original drawings were twice this size, but the artwork is reproduced here the actual size of the parts. The star with circle segments and the serial number are stencils for painting markings on the model.



FINESCALE MODELER: Paul Erler

Fig. 3. Clockwise from left, profile-etched parts (these are 1/87 scale lobster traps) on their vinyl backing sheet, a part about to be soaked in lacquer thinner to remove the backing, and a part after removal, with the softened backing behind it.

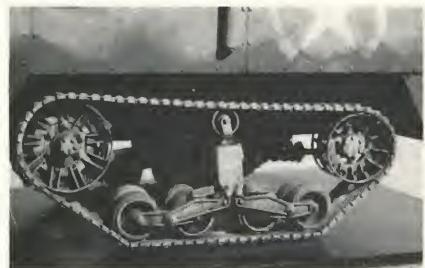
There are several tricks in preparing the drawings, and the most important one is to make your original drawings larger than the final size of the parts. I usually draw twice final size, but Fred Hultberg recommends four times final size as easier and still practical. When I send the artwork to Fotocut I annotate it to show how much bigger it is than the final size, and Fred reduces the drawing photographically when he prepares the negative. If you have to make dozens of identical parts and don't want to draw them dozens of times, draw one, find a photocopy machine that gives clean, black copies, and paste the copies down on your artwork.

Two warnings about preparing art-

work: Don't pack the pieces in too close to one another, and be realistic about what level of detail the technique can manage. As you can see from the parts illustrated here, the capabilities of the photoetching are pretty marvelous, but there is a limit.

Figure 2 is the artwork for the half-track idler and drive sprocket. Note how each pattern is repeated at least four times, because the model requires two of each idler and drive sprocket, each of which consists of an inside and outside half. Each half consists of circular center plates, outer rims, and many small reinforcing ribs. Note that each rib has a small tab that plugs into a slot in the circular center plate.

How photoetching works. At Foto-



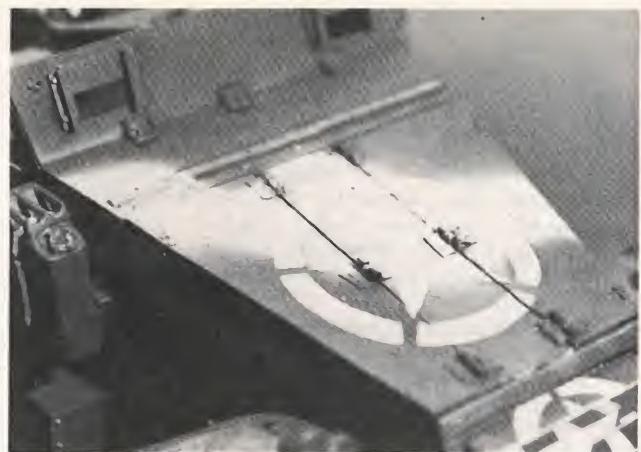
Figs. 4 and 5. (Top) The assembled photoetched sprocket and idler wheel halves and their counterparts from the original kit. (Above) A close-up of the completed half-track suspension. The track on the model was scratchbuilt and the other suspension elements thinned down for better appearance.



Figs. 6 and 7. (Left) The diamond-tread decking in the gun compartment of the T30 was made by partially etching .010" brass. (Above) The artwork for the diamond-tread parts and the nameplate for the model, reproduced here at full size for 1/35 scale.



Figs. 8 and 10. The engine deck, opened (left) and closed (right), with its scale-size working brass hinges. Also note the rivets on



the hood panels, which were made using the author's "salami slicing" technique.

cut, Fred makes a Mylar negative of the artwork to the final size, then contact-prints the negative against sheet brass that has been coated with a photosensitive acid-resistant coating. After exposure and developing, only those areas that are to become parts (the black portions on the original drawings) remain coated with the acid resist. The brass is then treated with acid, which eats away everything except the areas coated with the resist.

Six thicknesses of brass from .002" to .008" are available for profile parts (those that are etched clear through, separating them from the sheet). Considerably thicker sheets, from .010" up to .020", are available for partial etching to produce raised or indented detail or two-sided etching for detail on both sides of parts. For the sprocket and idler wheels I used .008" brass. Although this is thinner than the thinnest commonly available plastic (.010"), brass is so much stronger than plastic that you need not fear inadvertently bending or breaking the parts.

Using the finished parts. The parts come from Fotocut attached to a vinyl backing material, Fig. 3. Remove the parts from the backing by soaking them in lacquer thinner or Floquil Diosol, which quickly dissolves the bonding agent. Occasionally there is a little gunk left on the parts; Testors liquid cement cleans this off easily.

The parts can be glued together using epoxy or one of the cyanoacrylate glues. Figure 4 compares the finished photoetched brass wheels to the original kit wheels, and the difference is dramatic. On the model, Fig. 5, the lacy look of the sprocket and idler wheels is exactly what I was after. Incidentally, I have made these particular parts available through a commercial source so it is not necessary for you to prepare new artwork to obtain a set of wheels for your half-track project.*

Profile etching is most useful for armor modelers, but it is also possible to

partial etch. In partial etching the acid does not eat all the way through to the vinyl backing, but is chemically stopped, leaving a brass sheet with detail etched into it (or raised, as in the case of rivets). On my T30 conversion I needed a diamond antiskid pattern on the floor of the gun compartment, Fig. 6. I prepared artwork, Fig. 7, and had Fotocut prepare a partially etched floor. The cost, including negative charges, was about \$15.00.

The disadvantage of partial etching is that the finished parts must be cut away from the rest of the brass sheet using a razor saw. While I could have used profile etching to make the diamond pattern on the floor, I felt that gluing the intricate screening pattern to a solid floor would have been more difficult than cutting out the solid piece with the pattern etched into it. I have also used partial etching to make intricate display bases and title plaques, including the label plate for the T30 shown in Fig. 7.

As I mentioned earlier, photoetching is not inexpensive, and in many cases (including my T30) the cost of photoetched parts far exceeds the cost of the rest of the model. That means photoetching is probably not for everybody. However, the technique allows you to fabricate very intricate parts and attain a high level of detail not possible using conventional techniques. Besides the wheels and flooring shown here, other armor details that can be made include screening, track links, track shoe guide horns, wheel detail, and even spoked wheels for 1/35 scale motorcycles and bicycles.

Making scale working hinges. While researching the T30 conversion I came

across a lot of detailed reference material on the half-track engine. I became determined to add an engine to my model, but doing so would mean that I would have to make a working hood so the engine could be seen. The vehicle has a conventional armored hood with four folding panels — and no less than 12 hinges, Fig. 8.

I wracked my brain trying to dream up a trick for making working hinges with a scale appearance. Finally, the obvious occurred to me: It might be possible to make hinges out of very thin shim brass sheet in much the same manner that actual hinges are made. I found a 6" x 12" sheet of Sig** .001"

**Sig Manufacturing Co., Montezuma, IA 50171.

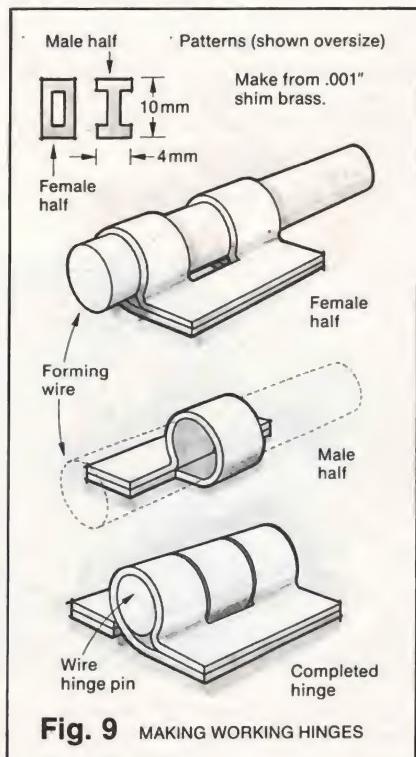


Fig. 9 MAKING WORKING HINGES

*David Reed, 13407 Wales Creek Road, South Wales, NY 14139. Prices are \$13.48 for .005" sheet, \$18.90 for .008" sheet etched from two sides (recommended). Add sales tax if you are a New York resident. Several other sheets, including aircraft, ship, and diorama parts, are available from the same source.

shim brass (enough to make an awful lot of hinges!) at a railroad model shop.

After a good deal of trial and error I came up with shapes for the male and female hinge halves, Fig. 9. Each part is bent around a forming wire and the flaps glued together with super glue. It's a good idea to lightly oil the forming wire so it remains free. Once the forming wire is removed the male and female halves can be assembled with a wire hinge pin.

I should warn you that making these hinges takes a great deal of patience, and that they are very fragile and easy to damage. But they work quite well, Fig. 10, and this is the only method I have found to make hinges that are not grossly overscale.

Making scale rivet heads. Just as ship and biplane modelers are plagued with rigging (it's hard to build, but the model looks strange without it), rivets are the curse of the armor modeler. Before going into three techniques that I use to make scale rivet heads, I'll describe three that, although widely used, produce unacceptable results.

One unsatisfactory method is to impress rivet detail through a sheet of .010" plastic using a pin. This leaves a little bump on the other side which is supposed to represent a rivet head; it always looks more like a pimple to me. Another method is to use small globs of white glue to form rivet heads, or to glue grains of salt or some other substance to the surface using white glue, neither very convincing.

The third unconvincing technique involves using a heat-sensitive plastic fiber which, when exposed to heat, shrinks to form a round, lens-shaped head. The idea is to drill a hole, put a piece of the fiber in it, hold a heat source near the protruding fiber, and "voila!" — a rivet head. This technique results in nonuniform, oversize rivet heads, often with an unrealistic undercut around the base.

Three rivet techniques that work.



Fig. 11. This scratchbuilt 1/76 scale char B1 bis tank includes dozens of salami-sliced rivets. You can't tell it from this photo, but the model comes apart to show off its complete interior!

The simplest way to make effective rivets is to slice them off the surface of an M3 Lee/Grant kit with a sharp razor blade and reattach them to your model with liquid cement. This technique produces excellent results even if it does leave your hobby den littered with the picked-over carcasses of old M3 kits.

I call the next technique "salami slicing." This is best for small rivets, such as those on 1/76 scale tanks, Fig. 11, although it certainly can be used on 1/35 armor, Figs. 12 and 13. The technique involves slicing tiny round slabs from stretched sprue. This probably sounds about as hair-raising as inscribing your name on the head of a pin, but there are several tricks and shortcuts that make it relatively easy.

To begin with, pay attention to the plastic you use to make the stretched sprue. Some firms use brittle plastic in their kits. If you try to use such plastic for salami-sliced rivets you'll find it hard to cut cleanly — it may even fracture into microscopic slivers instead of making a disc. The softer and more pliable the plastic is, the better; Monogram and Tamiya kits are usually safe

bets. One way to test for pliability is to bend a length of the sprue: If it snaps before being bent perpendicular to itself, it's too brittle. Good sprue often has to be bent repeatedly before it breaks.

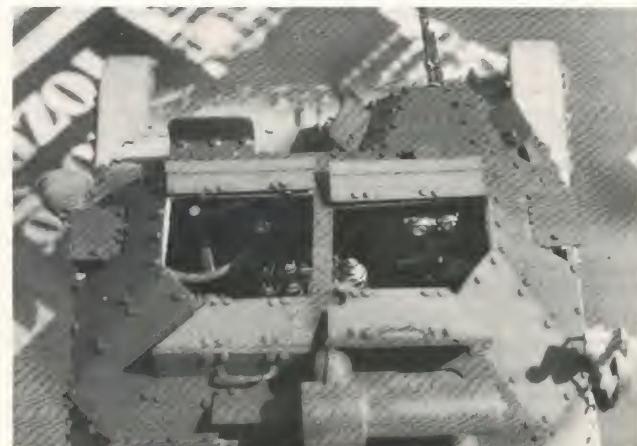
Obviously, it's ludicrous to slice off one rivet at a time. Attach a strip of masking tape to your work surface, sticky side up, then line up a dozen pieces of round stretched sprue like a miniature log raft, Fig. 14. Then, using a very sharp razor blade (that means brand new), you can cut off a dozen rivet heads at a time, thereby ensuring uniform thickness.

Why not just use double-faced tape instead of masking tape? The reason is that the real trick to salami-slicing rivets is not cutting the rivets, but getting them off the tape afterwards! The best method I've found is to remove the tape, rivets and all, and drop it into a small jar of denatured alcohol. This will dissolve the tape adhesive, leaving you with a nice little heap of scale rivet heads. Then the fun begins.

Out-of-line rivets are worse than none at all, so use a ruler and drafting



Figs. 12 and 13. This TKS scout tank used by the Polish Army in 1939 is tiny even in 1/35 scale. The model is scratchbuilt, has a full interior, and is encrusted with over 100 salami-sliced rivets.



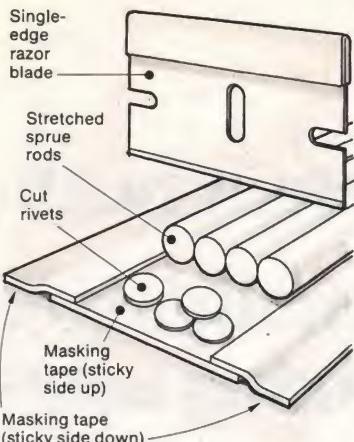


Fig. 14 SALAMI-SLICING RIVETS

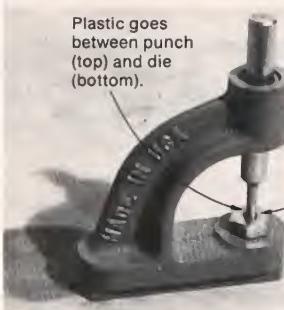


Fig. 16. This improvised press for drop-forging rivets was made from an inexpensive tool intended for setting grommets.

pencil to draw a light guide line where the rivets will be placed. Put a fresh No. 11 blade in your modeling knife and use its point to pick up individual rivets. Put a tiny drop of liquid cement where one rivet head will go and quickly position the rivet with the knife blade. It's important that you use just the right amount of cement: too little will dry too fast and the rivet will not adhere; too much will melt the tiny rivet head into an unsightly blob.

Drop-forged rivets. The last rivet technique yields the best results, but is also the most demanding and time-consuming. This "drop-forging" technique was developed by Karl Rosenlof, one of the most meticulous tank modelers I know. The essential first step is to make a brass die, Fig. 15. This is a piece of $\frac{3}{16}$ " brass rod with one end carefully filed flat. Using a motor tool and a fine ball-shaped dental burr, carve a small semicircular depression in the center of the end. The depression should be exactly the size of the rivets you want, maybe just a tad deeper.

To forge rivets the die is held in a vise with the depression facing upward. Hold a piece of .040" styrene over the die, place a nail set over the de-

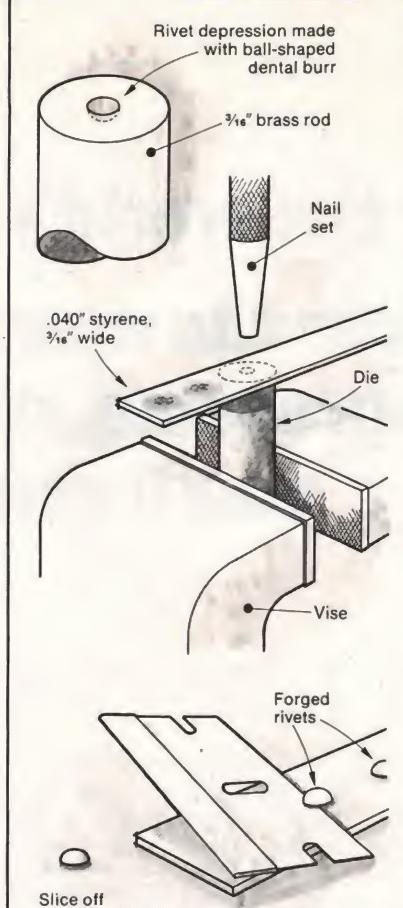


Fig. 15 DROP-FORGING RIVETS

sion, and strike the nail set with a small hammer. The hammer blow will force the plastic into the depression, making a rivet head which can then be sliced off and added to your model. I usually cut the .040" styrene into $\frac{3}{16}$ "-wide strips to make it easier to reach the individual rivets with a single-edge razor blade.

The main advantages of drop-forging are that you don't have to carve up expensive M3 Grant kits and you can produce any size rivet you want by making different dies. It's even possible to make several depressions in the die so you create several rivet heads for each hammer strike. The disadvantages are that this method is time-consuming, and that you'll eventually wind up smashing your fingers with the hammer.

To make drop-forging a little easier, check tool catalogs for the small tools used to set grommets. Such tools, Fig. 16, can be readily converted into simple drop presses to hold the punch and die and ensure that the plastic is struck immediately above the mold depression. Best of all, the grommet tool helps keep your fingers out of the path of the hammer!

FSM

AERO BOOKS
since 1939

MODELER'S INFORMATION

F-106 Delta Dart. By Bert Kinney is the most detailed of all D&S Series to date. The Modeler's Section covers all of the available kits & decals. Complete "how to" section is included on converting an F-106A kit into an F-106B kit. 72 pgs. Paper \$7.95.

Book #1



The Dynamite Gang by Richard Groh traces development and record of a typical fighter bomber group in WWII. Drawn from wartime records, personal diaries, photos, 7 recollections. 192 pgs. Paper \$12.95.

Book #2



F-4 Phantom II in Detail and Scale, part 3 (USN & USMC Versions), by Bert Kinney. Includes Navy F-4G, special coverage on camera bays in open and closed positions, and much more. Modeler's Section covers the F-4J & F-4B/N and other kits. 72 pgs. Paper \$7.95. Book #3

Send Book No. _____

To: _____

Check Visa Mastercard
Card No. _____

AERO PUBLISHERS, INC.
329-M West Aviation Rd., Fallbrook, CA 92028

ATTENTION PLASTIC MODEL BUILDERS



SPACE AGE PLASTIC WELDER

Makes Plastic Cement a Thing of The Past!

SEND \$1.50 + 50 CENTS Postage and Handling
DEALER INQUIRIES WELCOME
SEND NOW!

R.H. HEBNER DIST. \$2.00 Enclosed
P.O. Box AH Dept 1
Spencerport, N.Y. 14559

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Discover the world's oldest hobby.

Discover the most challenging, engrossing, relaxing hobby you'll ever experience.



Wouldn't you just love to build an historic ship model? A true-to-scale replica, decked out with gleaming brass fittings, polished walnut hull, delicate rigging—life-like in every detail? Well, now you can! And you don't have to be a skilled craftsman or a descendant of generations of shipwrights to do so.

Even if you've never built a model before, you can experience the relaxing pleasure and the pride of accomplishment that is offered by this fascinating hobby. You can build the two-masted schooner pictured here—an authentic replica of the *Swift*, a typical Virginia pilot boat that appeared shortly after the Revolution.

The secret is in our kit, especially designed for the first time modeler, with pre-cut parts that make assembly easy, and clear, large-scale plans and instructions that virtually take you by the hand and guide you every step of the way.

It really isn't hard

You'll learn to true a hull, taper the planking, run lanyards through blocks and deadeyes. (And you'll learn what lanyards and blocks and deadeyes are!) You'll build her just like the original *Swift* was built. You'll fit frames to keel, fasten the planks to the hull, and lay the decking. You'll add deck furnishings, tiller, and rudder. Then you'll set the masts and rig her lines just as she stood at the turn of the century—almost *two* centuries ago.

Creative? And how! Overwhelming? Not a bit! But be prepared for hours of the most challenging, engrossing, relaxing fun you've ever had. And

an astonishingly beautiful, museum quality ship model you can display with pride when completed.

Quality you can see and feel

The materials in our kit may be better than those used in the original *Swift*. The keel section and frames are pre-cut plywood, ready for quick assembly. The *Swift*'s hull is planked twice; once with thick, flexible lime-wood for strength, then overlaid again with planks of African walnut for lasting beauty.

You won't have to make the fittings—we've done that for you. Our kit contains ready-to-use blocks and deadeyes of rare, yellow boxwood. We include eyelets, bracers and belaying pins—over 70 parts of solid brass! Even the cabin door hinges are brass, as are the 250 miniature nails you'll use to fasten the planking to the hull and deck. And, since the original wooden *Swift* had no plastic parts, our kit doesn't either—*anywhere!*

An "Everything You'll Need" special offer, with **FREE TOOLS**

We want to introduce you to this fascinating hobby, *now!* So we've made it easy for you to get started. Our special offer includes the *Swift* kit plus all the tools you'll need to build her: miniature pliers, hammer, knife, drills, tweezers, sandpaper, glue, and more. You don't have to buy anything else. The tools would normally cost \$19.55, but they're yours FREE when you buy the kit alone for only \$39.95 (plus \$4.00 handling and insured delivery). We'll also include our 64-page color catalog illustrating and offering the widest selection of fine

wooden ship model kits and miniature tools available anywhere. Models of frigates, brigantines, and other historic vessels you'll want to build after you finish your "apprenticeship."

For fastest service on credit card orders, use our **TOLL-FREE** number,
800-526-2598
Monday through Friday, 9-5 EST.
In New Jersey, call 201-575-6253.
Or use the convenient coupon to send
check or money order.

Model Expo, Inc.
23 Just Road
Fairfield, NJ 07006

OUR UNCONVENTIONAL GUARANTEES

1. If less than delighted, you may return your purchase within 30 days for a full refund.

2. Should you break, damage, or lose a part during construction, we will replace it without charge.

3. Should you have any questions while building, call us. We have experienced, professional ship modelers standing by.



**SPECIAL OFFER
FOR THOSE WHO
HAVE NEVER
BUILT A SHIP
BEFORE!**



You get everything you need to build this handsome ship model: complete kit with pre-cut parts, fittings, tools, glue, sandpaper, and more.

**GREAT
FOR GIFT
GIVING**

The original Swift was used by the British consul to carry dispatches back and forth to England, and later formally taken into the British Navy. Our model measures 21" from the tip of her bowsprit to the end of her boom.

**Miniature
Cannon Kit Bonus!**

Set of two solid brass cannon on walnut carriages to be mounted amidship. \$4.00 value, sent FREE with your order.



Yes! Please send me _____ kits of the *Swift* @ \$39.95, plus FREE tools and cannons. My check or money order is enclosed. (Please add \$4.00 for handling and insured delivery. N.J. residents must add 5% sales tax.)

© Model Expo, Inc. 1982

MODEL EXPO, INC. Dept. FSM-83

23 Just Road, Fairfield, NJ 07006

Charge my credit card:
 MasterCard Visa American Express

Account No. _____

Exp. Date _____

Signature _____

Name _____

Address _____

City _____

State _____ Zip _____





Bob's 1/48 scale Monogram P-39F Airacobra. Note how light reflects off the acetate instrument faces. Bob has the "car door"

windows cranked halfway down. Also visible is the throttle quadrant and the ring sight above the instrument panel.

Detailing aircraft cockpits

The main ingredients are tiny pieces and a bit of time

BY BOB STEINBRUNN

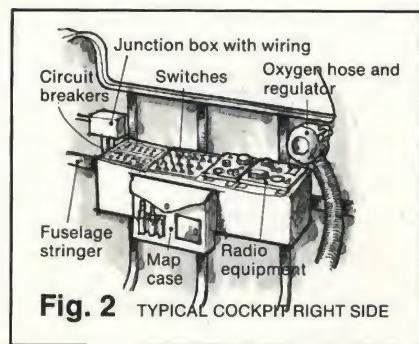
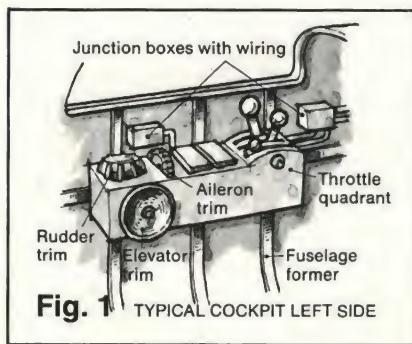
I FLY FOR A LIVING, so detailing the cockpit of a model is of more than average interest to me. The key to adding cockpit detail is *time* — not fantastic ability, the soul of an artist, or the hands of a watchmaker, as you may have heard. Just time.

It's all too easy to look at a photo of a real cockpit and be overwhelmed by the complexity of it all. But in detailing model aircraft cockpits, it is best to concentrate on one area at a time, finish it, and move on. I've been so frustrated by working on one thing and worrying about another that it ceased to be *fun*, and after all, fun is what modeling is all about. So instead of giving up and cementing the canopy closed, put your blinders on and work on it one step at a time.

Although I build mostly 1/48 scale World War Two aircraft, the tips in

this article can be applied to jets and to other scales. I like detailing cockpits in 1/48 scale; 1/72 scale seems to me to be awfully small for this kind of treatment, but I've seen it done well. Detailing in 1/32 scale almost requires a miniature manufacturer's data plate to look right. I don't have to go overboard on the time factor cobbling up details in 1/48 scale.

If you haven't tried your hand at cockpit detailing, now is the time to select a kit worthy of your effort, and arm yourself with as many cockpit photos as you can. Before you get too far into the research, settle on a particular variant of the aircraft. It is surprising how many changes are made in instrument panels and cockpits among variants of the same type of aircraft. Some



typical examples are the differences between the F6F-3 and -5 Hellcat instrument panels, or the changes in the USAF, USMC, and Navy versions of the OV-10A Bronco. Once you have decided which version you'll build, cover your workbench with cockpit photos, plans, and drawings.

Starting out. Typically, WWII fighter cockpits had the trim wheels and the throttle control, or quadrant, on the left console or attached to the left fuselage interior structure. The radio controls, circuit breakers, and oxygen regulator with hose were usually found on the right side, Figs. 1 and 2. Of course these rules are not hard and fast, so always check reference photos for the plane you are modeling.

For easy access, cockpit detailing is best done before the fuselage halves are glued together. I start with the fuselage sides, grinding away any shallow kit detailing and mold marks with a Dremel Tool and burr. Next, I add fuselage formers and stringers with Plastuct* shapes and Evergreen strip styrene.** It's a good idea to periodically check the fit of the cockpit tub or seat assemblies to make sure that the added detail allows adequate clearance.

I use .010" sheet styrene and wire or stretched sprue to simulate junction boxes and cables visible in the reference photos, and build up the consoles with sheet styrene. Throttle quadrants can be made from sheet styrene, Fig. 3. A visit to a model railroad shop can reward you with tiny photoetched brake wheels that make excellent trim wheels and landing gear cranks, Fig. 4. Small parts made for HO model railroads can be used for throttle, mixture, prop pitch, and supercharger levers, Fig. 5.

I make oxygen hoses by wrapping thin motor armature wire around thicker wire in a loose spiral, coating the resulting coil with a liquid masking agent, and painting when dry, Fig. 6.

*Plastruct, 1161 Monterey Pass Road, Monterey Park, CA 91754.

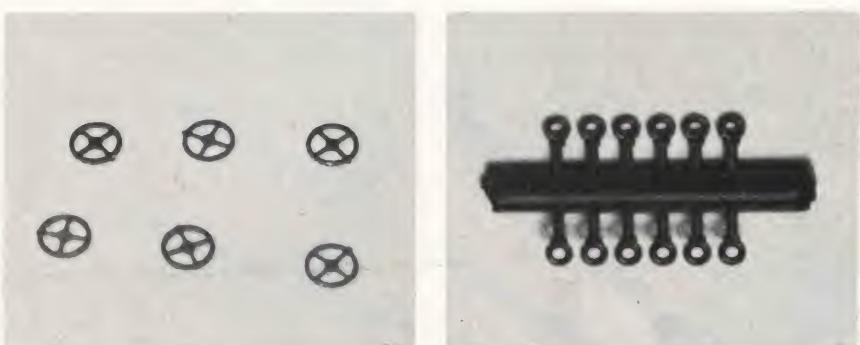
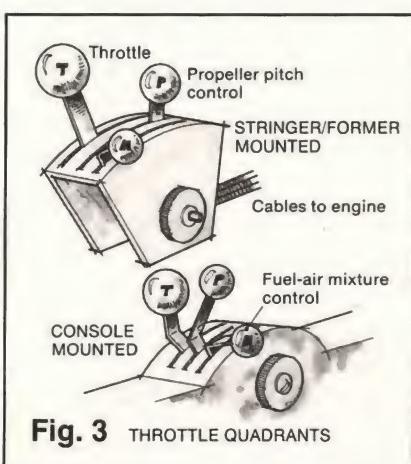
**Evergreen Scale Models, Bellevue, WA 98005.



The cockpit in this Otaki 1/48 scale Bf 109G-6 is almost entirely scratchbuilt. Note the yellow fuel line on the right side of the cockpit. Bob vacuum-formed and opened the canopy so the interior detail is easier to see.



Monogram's 1/48 scale P-47D Thunderbolt "Miss Behave" has received the cockpit detailing treatment. Note the added rearview mirror, ring and reflector gunsights, and rudder pedals.



Figs. 4 and 5. (Left) Photoetched brass model railroad brake wheels make realistic trim and landing gear crank wheels. (Right) Tiny injection-molded styrene eyebolts can be used as levers on throttle quadrants and other cockpit controls. These can be found in model railroad shops.



Fig. 6 OXYGEN HOSE

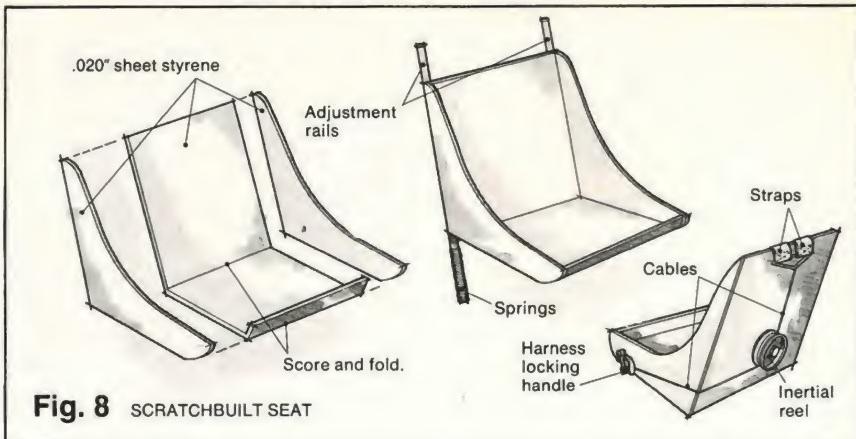


Fig. 8 SCRATCHBUILT SEAT

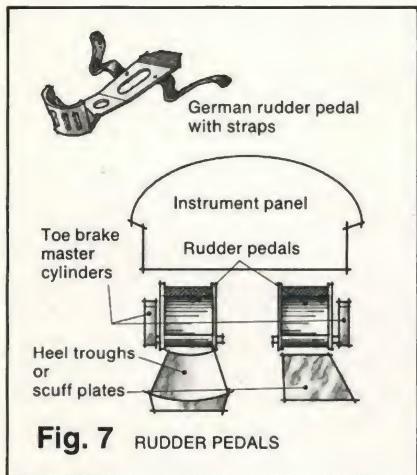


Fig. 7 RUDDER PEDALS

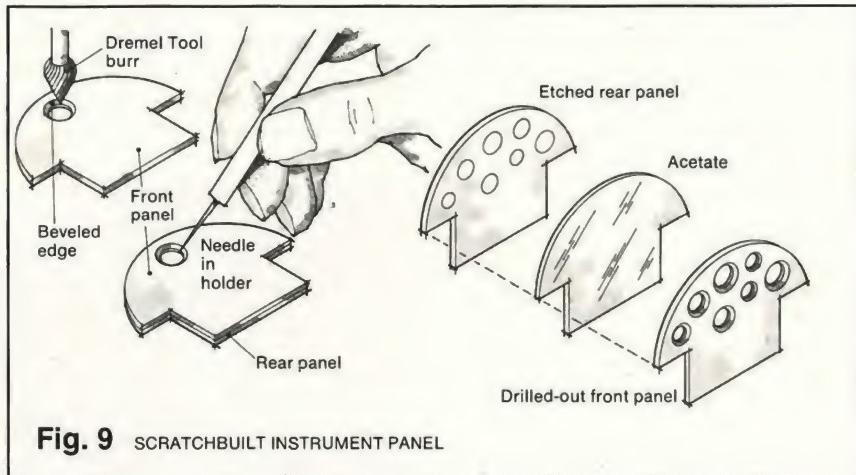


Fig. 9 SCRATCHBUILT INSTRUMENT PANEL

Then I bend it to shape, paint a fitting on one end, and attach the other to the regulator made of a disc of sprue.

Floor and rudder pedals. Some aircraft actually had no floor at all (for example, Wildcats and early Corsairs), just a seat attached to an armored bulkhead with two troughs leading up to the rudder pedals. This arrangement

can be made using Plastruct "I" beams attached to fore and aft cockpit bulkheads.

I make rudder pedals from sheet styrene cut to the appropriate shape and suspended on stretched sprue rods. Many U. S. aircraft had toe-operated main wheel brakes with master cylinders attached to the sides of the pedals.

The brakes were activated by pivoting the rudder pedals; the cylinders can be represented by using sections of sprue, Fig. 7. German rudder pedals had leather straps which can be simulated with masking tape.

Seats. Kit-supplied seats are sometimes usable, but a seat scratchbuilt from .020" sheet styrene looks better. I build the basic seat in three sections which then can be shaped or rounded into the particular seat desired, Fig. 8.

Some seats have height adjustment rails with springs which can be made of wire and Walther's* No. 945-3005 HO railroad coil springs. The seat belts, harness, and other straps can be made from your favorite tape, and a set of Waldron** or Unique Scale*** buckles, although expensive, really dress up the cockpit.

U. S. aircraft featured a shoulder harness that went over the back of the seat, where the two straps joined together in a metal fitting. The fitting was attached to a cable which ran down

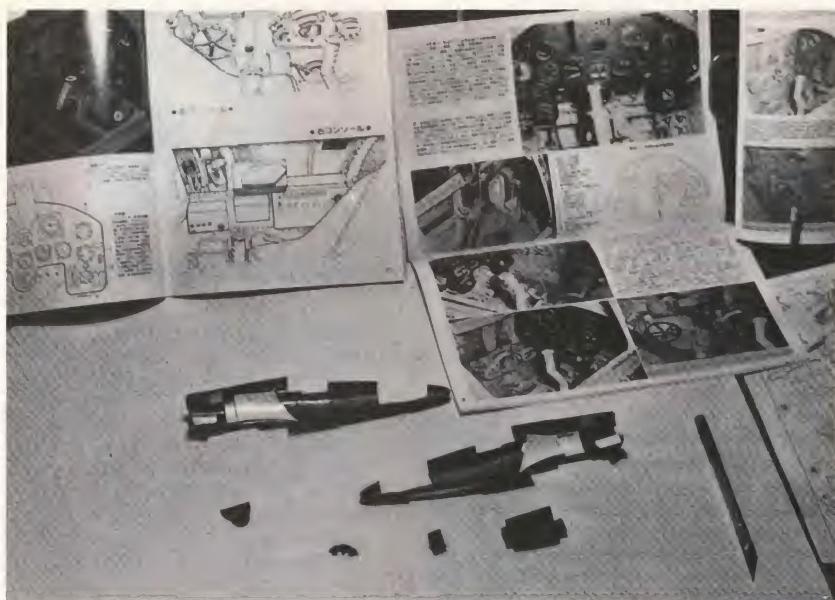


Fig. 10. Painting small parts such as instrument panels, oxygen bottles, seats, and sticks is easy when they are attached to sprues with a small drop of liquid cement.

*William K. Walthers, Inc., 5601 West Florist Avenue, Milwaukee, WI 53218.

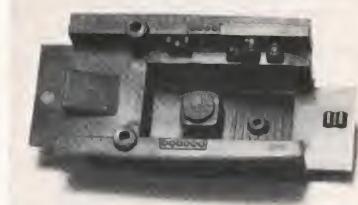
**Waldron Model Products, 1358 Stephen Way, San Jose, CA 95129.

***Unique Scale Hobbies, 1178 Boston Road, Springfield, MA 01119.

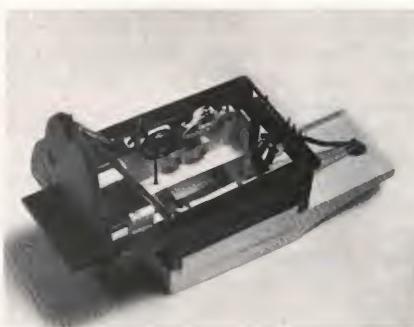
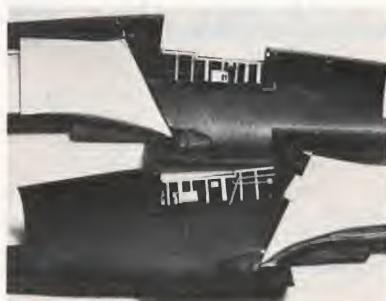


Step 1. Superdetailing a cockpit is not difficult if you take it one step at a time. Let's take Hasegawa's 1/48 scale Kyusho J7W1 Shinden and start by setting up reference material in a convenient location. This leaves your hands free to work on the model.

Step 3. Strip styrene and sprue simulate the cockpit side wall structure. The fuselage halves will be assembled after installation of the cockpit tub. The large white areas to the rear of the cockpit are sheet styrene that blocks off the intakes on the fuselage sides.



Step 2. This is the kit cockpit tub before modification. The sidewalls and floor will be cut away and replaced with more realistic structures. The sockets for the rear brace will also be trimmed away.



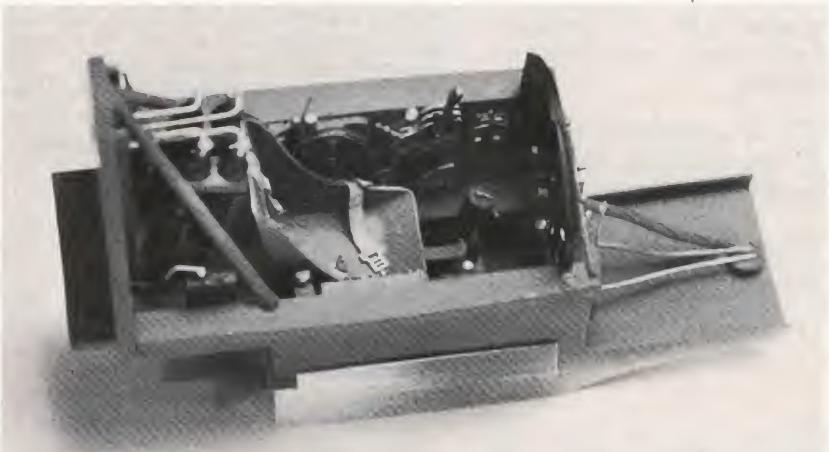
Step 4. (Left) The completed cockpit tub before painting. Note the "I" beam foot troughs, and the sheet styrene radio with sprue knobs. (Right) The scratchbuilt throttle quadrant and other controls applied to the left side of the cockpit tub.



Step 5. Here's the kit seat (left) beside the finished scratchbuilt replacement. Note the masking tape harness and seat belts. Unique Scale brass belt buckles add realism.



Step 6. Compare the kit instrument panel with its scratchbuilt counterpart. Note the added relief from the beveled edges and etched detail on the instrument faces.



Step 7. The completed cockpit tub after painting. The instrument panel, stick, and seat have been installed, and the tub is ready to be mounted in the fuselage.

1st Armored Model Supply Company

Mail Order Only

* HEADQUARTERS * For SUPER-DETAILERS & SCRATCH-BUILDERS

- Grill-Pak • Poly-Rod • Nuts & Bolts
- Scratch-Strip • Sheet Styrene

Send \$1.50 for 1983 catalog.

1st Armored Model Supply Company
P.O. Box 1706, New Rochelle, NY 10802

TIRED OF WAITING?

Modeling isn't supposed to be a waiting game. The Plastic Place features personalized service...every letter answered. We are now importing Airfix kits direct from England and have access to other English kits.

We carry all Hasegawa, Matchbox, Heller, Monogram, Fujimi, Esci, Otaki, Testors, Italeri, Tamiya **Planes**.

Hasegawa, Matchbox, Esci, Tamiya, AIRFIX, Heller **Armor**.

Airliners From England, Mexico, Brazil.

The full line of Micro Scale Decals and solutions. Badger airbrushes, Intematic compressors.

Floquil and Polly S paint, Squadron signal books, Koku Fan, Air International, other magazines. We pay half postage. You'll like this outfit!



For 56 page catalog send \$1.50 to:
THE PLASTIC PLACE
6003 S. Salina St. Syracuse, NY 13205

One of the largest selections of plastic kits in the state with over 2000 square feet of aircraft, cars, trucks, and military models.

Plus one of the largest selections of die cast vehicles anywhere.

Open every night til 8 p.m.

Master Charge/Visa accepted.

"You'll love the prices, too!"

HAROLD'S PLACE, INC.
522 Chestnut St., Lynn,
MA 01904

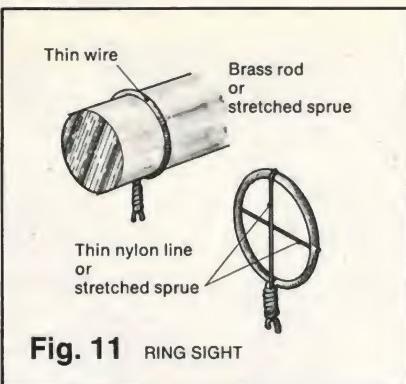


Fig. 11 RING SIGHT



Fig. 12. Technical pens can draw fine lines for miniature cockpit placards. Here is a tiny sheet styrene placard which will be attached to the sidewall of a cockpit tub.

to an inertial reel on the back of the seat. From there another cable ran to the harness locking handle on the left side of the seat pan.

Instrument panels made easy. The instrument panel is the main ingredient of a detailed cockpit, one of the few items on a model where a little effort yields a big dividend. Although the finished product looks difficult to make, I think it's the easiest part of the cockpit.

Start with a paper template that is roughly the shape of the actual panel, and fit it to the fuselage halves by trial and error. Use the template as a pattern to cut two blank panels from .010" white sheet styrene, and a third from clear acetate, Fig. 9. Drill out holes for the instruments in one of the styrene panels with a Dremel Tool No. 118 burr. I use this instead of a drill because the burr bevels the edges of the holes for a more realistic appearance.

Next, paint both styrene panels flat black. Attach these and other small parts to sprues to make them easier to paint, Fig. 10. Using the front panel as a template, use a needle to scratch through the black paint of the rear panel. I first etch a circle around each instrument, and then etch in the instrument markings.

Next, sandwich the clear acetate between the two styrene panels, and carefully apply white glue around the edges. The clear acetate simulates the glass faces of the instruments. This extra touch looks especially nice when light reflects off the instruments. After



Meet Bob Steinbrunn

Bob is a former U.S. Army helicopter pilot with Vietnam combat time in both UH-1 "Hueys" and AH-1 "Cobras." He currently flies helicopters for a Minneapolis-based corporation. He has been a member of IPMS chapters in Dallas and Philadelphia, and is now an active member in the Twin Cities Aero Historians. His favorite modeling subjects are 1/48 scale WWII aircraft and he has won many awards at regional and national IPMS conventions.

the panel is dry, add any additional lettering, placards, switches, and knobs.

Gunsight reflectors can also be made from acetate. If the particular aircraft you are modeling had a ring-and-bead sight, wrap armature wire around a suitable piece of brass tubing or sprue, twist it, and remove the tube, Fig. 11. Crosshairs can be made from small-diameter nylon thread or fine stretched sprue. Glue the sight to the cockpit coaming before attaching the windscreen.

Finishing. After all the subassemblies are constructed, paint the cockpit its main color, then paint the details. Add stenciling and placards by painting red, black, or white rectangles and then adding the writing in a contrasting color. A technical drafting pen, such as a Koh-i-noor Rapidograph, is excellent for these as well as for making stencils, Fig. 12. They have an ink reservoir and a hollow, needle-like point that draws a fine line. The pens have interchangeable tips of various widths and are available from artist's supply stores. Inks come in many colors, but I find black, white, and red to be most useful.

If the aircraft you are modeling has a sliding canopy, glue two pieces of sprue along the fuselage sides for canopy tracks. When the cockpit is finished and the fuselage is assembled, cover the cockpit with a paper hood and seal the edges with liquid masker. This mask is easily removed after the model is painted.

Finally, I think it's better to add too much detail, even if you don't think it will show once the model is assembled. It's always more difficult to add details after the model is finished.

There, wasn't that easy? And all it took was time!

FSM



All photos, FINESCALE MODELER: A. L. Schmidt

(Top) This boxed diorama based on a 90 mm figure illustrates the principle of not modeling details that won't be seen. The front-surface mirror (at the right edge of this photo) almost

doubles the apparent size of the scene. (Bottom left) It's going to be mighty hard for Sam to play it again on this piano! Because it would never be seen there was no need to model the keyboard.

"Casablanca"

A
HAL B. WALLIS
PRODUCTION

CLAUDE RAINS · CONRAD VEIDT · SYDNEY GREENSTREET · PETER LORRE
Directed by MICHAEL CURTIZ

Modeling Rick's Café Americain, Casablanca, 1941 You must remember this . . .

BY RICHARD SMITH

AFTER PROMISING to build a scene from *Casablanca* for a fellow hardcore fan of the movie, it began to dawn on me how difficult the task would be. How could I re-create the atmosphere of a classic motion picture in a static piece with a single 90 mm figure? How

would I keep it from looking toylike? And how was I going to include all the rich detail that helped establish the intense mood of intrigue at Rick's Café Americain in North Africa in 1941? Just as the people at Warner Brothers didn't know how the movie was going to end when they began shooting it, I had no idea how this project was going to turn out when I began working on it!

Deciding how much to model. At

first I planned to simply mount the Asheton-Bayard Ltd. figure of Humphrey Bogart (No. EK-2, from the Entertainers series by Ray Lamb) on a small wood base with a table or piano. However, without control of the lighting such a piece would have little or no atmosphere — which was what I was really after — so what started as a figure on a base quickly became a boxed diorama.

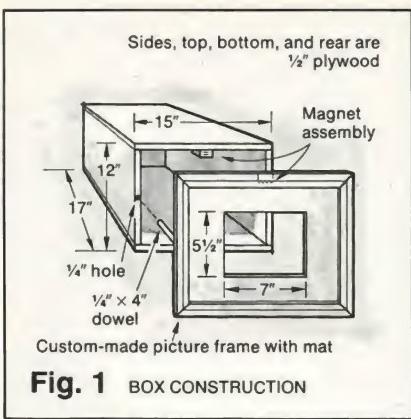


Fig. 1 BOX CONSTRUCTION

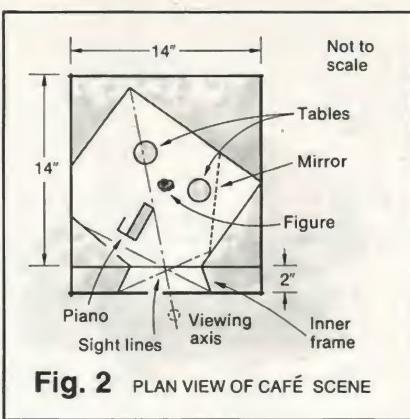
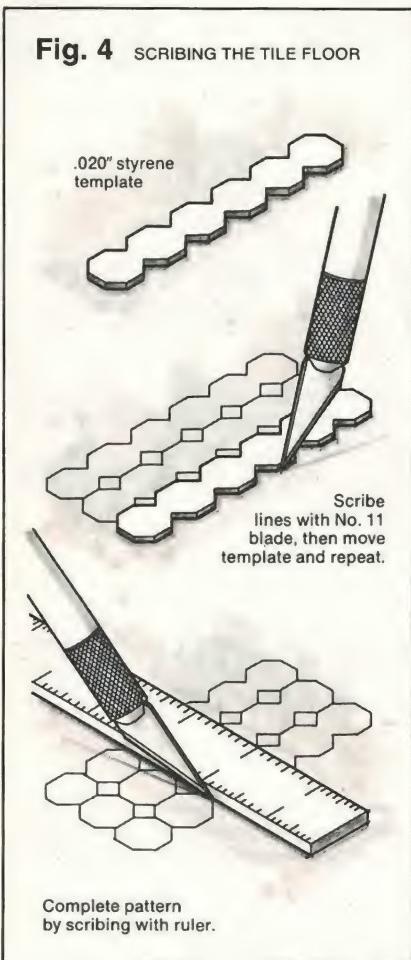


Fig. 2 PLAN VIEW OF CAFÉ SCENE



Complete pattern by scribing with ruler.

The diorama quickly grew in complexity, too. My initial idea was that the scene inside the box would include the Bogart figure, a few props, and perhaps a ceiling fan; the rest, including the background, would have been black. Realizing that such a scene was also not what I was looking for, I finally decided to actually model the interior of Rick's Café.

After researching the scene (including seeing *Casablanca* eight times), I decided to combine several props from the film in a simplified corner of the café based on my own design. I'd include Sam's piano (complete with music sheets, ashtrays, and a wine glass on top), and tables littered with glasses, ashtrays, a bottle, and a chess set. A spinning ceiling fan would be a must, and the setting would feature stucco arches, a moonlit window with venetian blinds, and large wooden doors.

Building the shadow box. I started by constructing the outer box from 1/2" plywood, Fig. 1. The box has an open front so that the scene itself can slide in and out. For a finished appearance I covered the sides and top of the box with Midwest Products* walnut veneer and rubbed the veneer with tung oil.

The front of the box is covered with a frame that I made at a do-it-yourself frame shop, where I also obtained the mat board insert. Total cost for the

frame and mat was about \$25.00. The frame is aligned with the box by a 4" length of 1/4" dowel glued perpendicular to the frame on each side of the opening. These dowels slide into 1/4" holes drilled into the front edge of the box. Two magnetic cupboard latches hold the frame snugly against the box.

The opening in the mat is 5 1/2" x 7". Behind the opening I added a 2"-deep rectangular reveal which narrows the viewing opening to 3 1/2" x 5". This inner frame is important because it provides complete control of the sight lines into the scene and keeps stray light out of the box. Mine is covered with black velvet.

Planning and building the interior.

The café scene is a smaller box that slides into the outer case. The inner box rests on four 3 1/2"-high wood blocks fastened to the bottom of the outer case, leaving ample room for the lighting transformer, wiring, terminal strips, and lighting dimmers underneath.

The scene is built on a 14" square of 1/8" particle board. One of the first things I determined was that the viewing axis of the scene should not be perpendicular to the front of the box. By moving the center of interest off center, Fig. 2, I was able to add an inch or two of actual depth, and by placing a mirror along one edge I could make the room look larger than it is. I had to try the mirror at different angles to see which looked best (and which would not reflect another Bogie!).

Front-silvered mirrors like the one I used are available at scientific supply stores and some glass and mirror supply houses. They are fairly expensive compared to regular mirrors; the one in my diorama cost \$14.00, but I feel it's worth the extra expense because there is no apparent gap between the modeled arch and its reflection. Half the main door is also a reflection, and most viewers don't notice the mirror until it is pointed out to them.

The next step was building the walls, Fig. 3. I made paper templates of the arches, traced them onto mat board, and cut the board with a No. 10 X-acto knife blade. In the movie set the arch over the main door was longer and

*Midwest Products, 400 South Indiana Street, Hobart, IN 46342.

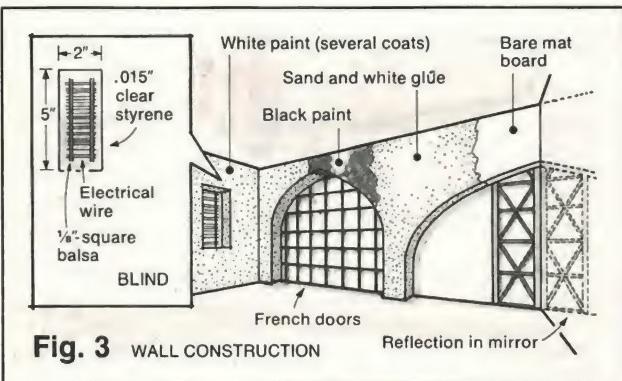


Fig. 3 WALL CONSTRUCTION

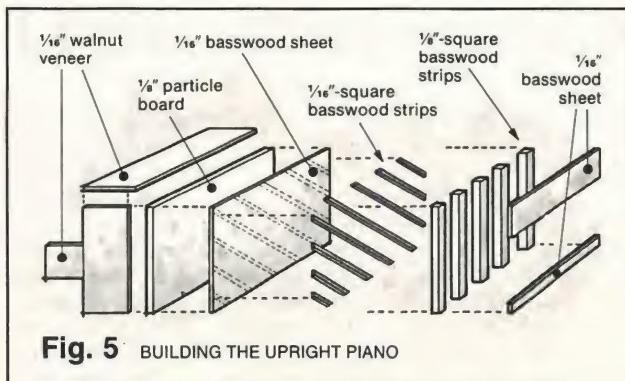


Fig. 5 BUILDING THE UPRIGHT PIANO

lower than the others, and I cut only half of this arch, letting the mirror reflection furnish the other half.

The taller, adjacent arch is complete, and behind it are large French doors that open into another room of the café. These doors were built by gluing $\frac{1}{8}$ "-square balsa to .015" clear styrene (Walthers* No. 949-599). To block the view into the other room I glued a piece of tissue paper (I used the paper that came packed with the Walthers clear styrene) to a 7" "curtain rod" made from $\frac{1}{8}$ " x $\frac{1}{4}$ " balsa. The curtain rod was then glued to the plastic, above the arch and out of sight. Dim lights glowing behind the translucent tissue curtain add greatly to the overall effect of the scene.

The wall on the left side of the scene is mat board with a $1\frac{1}{2}$ " x 4" window. I recessed the window about $\frac{3}{4}$ " into the wall by adding a rectangular box made from .020" styrene around the edges of the opening. The window blind was made by gluing two $\frac{1}{8}$ " x $\frac{1}{8}$ " x 4" balsa strips 1" apart on a 2" x 5" piece of .015" clear styrene, the same material used to make the doors. I then glued about 60 2" lengths of electrical wire at right angles to the balsa. The wire had been painted ahead of time with Pactra M21 Mustard and the clear plastic was sprayed with Testors Dullcote to give it a translucent look.

I glued the walls to the particle board subfloor with 5-minute epoxy and added reinforcing blocks made from 1" x 1" wood. To simulate the stucco texture I coated the walls and arches with white glue and poured sand over the glue, brushing off the excess after the glue dried. The result was far too grainy, and my solution was to give the walls several coats of paint to deemphasize the coarse texture.

I started painting by spraying the walls with Testors Flat Black as a primer so that the white overcoats would be a creamy off-white rather than a brilliant white. I lost count of the number of coats of Testors Flat White I applied over the black; I just kept adding coats until the stucco looked right.

Ceiling and floor. Making the ceiling was easy — it's simply a piece of mat board painted the same way as the arches and walls were (only using fewer white coats) and glued across the tops of the walls after the scene was complete.

The tile floor, which is a pattern of black octagons and squares with white grout around them, was more difficult to make. Cutting and applying separate tiles would have been too much work, so I made a template and used it to scribe the tile patterns into a painted plastic floor, Fig. 4. First I sprayed the

the MODEL WORKS

We feature what we feel are the finest lines of scale models.

We do not have a catalog available, write for specific items desired. Include SSAE.

- Wide range of car kits-including Tamiya and 1/43 metal
- Military - Armor & Aircraft
- 1/700 Waterline Ships & Dioramas
- Reference Books, Periodicals and Photos
- Paints, Decals, Tools, and Scratch Builder Materials

1655 E. COLORADO BLVD.
PASADENA, CALIFORNIA 91106 213-793-6061

**PUT YOUR
X-ACTO®
BRAND
BLADE TO
THE TEST.
IF IT CAN'T CUT IT
...CHANGE IT.**

The difference between a dull X-ACTO blade and a sharp one can't be seen. Until it shows up in your work. But before that happens, take a minute to take the X-ACTO test.

THE X-ACTO TEST:

1. Put the magazine down, face up. 2. Put your X-ACTO blade on the dotted line and cut along the border. 3. Remove this ad. 4. If your blade didn't cut through three or more pages, replace it. If it did, replace the magazine.

Your X-ACTO blade is designed to make the cleanest cut under the least pressure. When it takes work to make it work, change the blade. And remember: Your X-ACTO knife is indispensable. But your X-ACTO blade is conveniently disposable.

In a variety of blade types and package sizes wherever X-ACTO products are sold.

**Put new life
in your X-ACTO knife.**

1982 HULL X-ACTO INC.

*William K. Walthers Inc., 5601 West Florist Avenue, Milwaukee, WI 53218.



While the 90 mm Humphrey Bogart figure is definitely the centerpiece of Richard's scene, in a sense Bogie is a supporting actor here. What makes this boxed diorama work is the way it captures the overall atmosphere from the movie rather than any single element or detail of Rick's Café Americain.

.020" styrene floor with Testors Flat Black, then cut a template consisting of six octagons from the same material. I used the template to scratch the tile pattern into the prepainted floor with a hobby knife. Scratching through the black paint reveals the white plastic underneath, a perfect simulation of grouted tiles. After all the lines were scribed I sprayed Testors Glosscote to achieve a semigloss finish.

Adding furniture and accessories. The smaller modeled items in the scene include a piano, two tables with chairs, a working ceiling fan, and a stained-glass hanging lamp.

After contemplating the grueling task of making 88 individual 90 mm scale piano keys, I decided to model the back of Sam's rolling upright. This meant I would only need to make the top, back, and one side, since the rest of the piano would never be seen.

Figure 5 shows how the piano was built. I started by covering a solid particle board core with Midwest Products sheet basswood on the back and Midwest walnut veneer on one side and the top, then added vertical and diagonal basswood strips on the back. I finished by varnishing the entire piano.

The sheet music and wine glass on top of the piano and the bottle and glasses on the tables are dollhouse miniatures, Fig. 6. (The tunes on the sheet music are polkas, but nobody has noticed that yet!) The ashtrays are Phoenix Miniatures* plates (No. AF1) with four notches made with wire cutters. The cigarette butts are white stretched sprue; filters and lipstick stains were painted on after gluing the butts to the ashtrays.



Figs. 6 and 7. The glasses, bottle, and chess pieces on the café tables are dollhouse miniature accessories. The realistic tablecloth is made from paper toweling soaked in dilute white glue.

The tables are made from the plastic covers to some fold-up picnic cups I found around the house. Using them saved me the trouble of carefully cutting round shapes that would later be covered by tablecloths anyway. The tablecloths are 3" squares of paper toweling soaked in a 1:1 solution of white glue and water, then draped over the plastic tabletops, Fig. 7. After the glue dried thoroughly I sprayed the tablecloths with one coat of Testors Flat Black and several coats of Testors Flat White. The center posts and feet of the

tables are made from $\frac{1}{4}$ "-square balsa.

The ceiling fan comes from an unlikely source: It's a four-bladed Cox gas-powered model airplane propeller. The fan is epoxied to a $\frac{1}{8}$ " metal shaft which passes through the ceiling and is in turn glued to an electric clock mechanism. The clock motor rotates the fan at one revolution per minute, hardly fast enough to circulate much air, but enough to convey the impression of movement without drawing too much attention to itself. The speed turned out to be perfect; often it takes a viewer several minutes to realize that the fan is moving!

The stained-glass ceiling lamp was made from a dollhouse miniature table lamp. I removed the brass lamp base and drilled a hole in the plastic lampshade to accommodate a model railroad 14-volt light bulb and miniature socket. The lamp hangs from a costume jewelry chain cut to length and made rigid by gluing the links together with Super Jet glue. The wires from the socket were painted black, woven through the chain links, and passed through the ceiling.

The star of the scene is the Ashton-Bayard Ltd. 90 mm figure of Humphrey Bogart. Although it doesn't look as much like Bogie as I would like and the head is slightly oversized, the figure is far better than anything that I could sculpt myself. I didn't spend a lot of time painting the figure because the lighting in the box was to be dim and the closest a viewer can get to the figure is 7".

Lighting — and a finishing touch. The lighting system is simple. A small train set power pack powers seven 14-volt bulbs, including a blue bulb behind the window, blue and clear bulbs behind the French doors, red and clear bulbs behind the main doors, a clear bulb in the ceiling lamp, and a clear bulb that illuminates the entire scene. The bulbs are wired to the accessory terminals on the transformer, and each bulb has its own rheostat to adjust its brightness. These rheostats (also called potentiometers) cost \$1.00 each at an electronics store; all are fastened to a 3" x 14" panel of $\frac{1}{8}$ " basswood mounted in the space below the scene.

The final touch for this scene is one that can't possibly be appreciated in a magazine article. I found an inexpensive windup music box at an import store and epoxied it to the inside of the outer case with the winder key protruding through a small hole drilled in the plywood. The tune? Naturally, it's "As Time Goes By."

FSM

REFERENCES

- Anobile, Richard J., *Casablanca*, Universe Books, New York, 1974.
- Koch, Howard, *Casablanca, Script and Legend*, Overlook Press, Woodstock, New York, 1973.

*Phoenix Model Developments Ltd., The Square, Earls Barton, Northampton, England, NN6 0NA.

Modeling Adolph Galland's bare-metal Bf 109F in 1/72 scale

There's always an exception — and this is it

BY WAYNE E. MOYER

SHORTLY AFTER the Dayton chapter of the International Plastic Modelers Society was formed in 1968, one of the members brought a co-worker from Wright-Patterson Air Force Base as a guest speaker. Gerhard Hopf started World War Two flying Bf 109s and finished it flying Me 163s. In between combat tours he served as a test pilot, evaluating captured Allied aircraft. He flew nearly every American, British, and French aircraft, as well as the German ones. He was a fascinating and entertaining speaker, full of anecdotes: the origins of the all-red Me 163, and its consequences, for example. Another story he told was of a surprise visit by the General of Fighters, Adolph Galland. According to Hopf, they knew it was Galland while he was still in the pattern, because of his "bare metal, polished Bf 109F with only a Mickey Mouse on it."

That passing reference stuck with me through the ensuing 14 years. I've gone through every Bf 109 and Luftwaffe book I could get my hands on, and exhausted the USAF Museum's files looking for a bare-metal 109. No luck. I quietly decided that my elusive 109 was a faulty 25-year-old memory in a busy pilot's life, but I kept hoping.

On March 30, 1982, General Galland, who survived the war and became one of the leaders of the modern Luftwaffe, spoke at a dinner for the Friends of the Air Force Museum. During the question and answer period, I was able to ask him about my "pet" 109. General Galland confirmed Mr. Hopf's description; natural metal, polished, with only national insignia and his personal emblem. And he had not one, but two such Bf 109Fs at his disposal. Both, incidentally, incorporated the same cockpit modifications as did all his combat aircraft — an ashtray and cigar lighter.

In response to a question about whether the all-silver planes carried victory marks, the general answered, "of course, but not all [were stripes]. The number 70, my Oak Leaves and Swords, and the rest were stripes." I wasn't able to ask him about the fabric surfaces, but I assumed the rudder



As personal transportation Adolph Galland flew an unusual pair of identically marked Messerschmitt Bf 109Fs while he served as the Luftwaffe's General of Fighters.

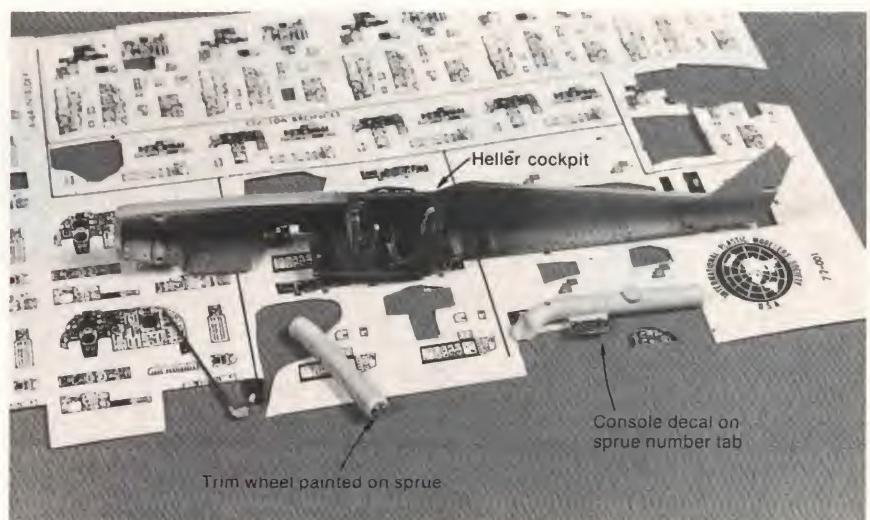


Fig. 1. Heller's cockpit tub and added details make up the interior. Note how a trim wheel has been painted on the end of a scrap of sprue and how console decals have been applied to a sprue number tab.

would have been yellow as on his combat aircraft, and that the ailerons and elevators were silver-doped.

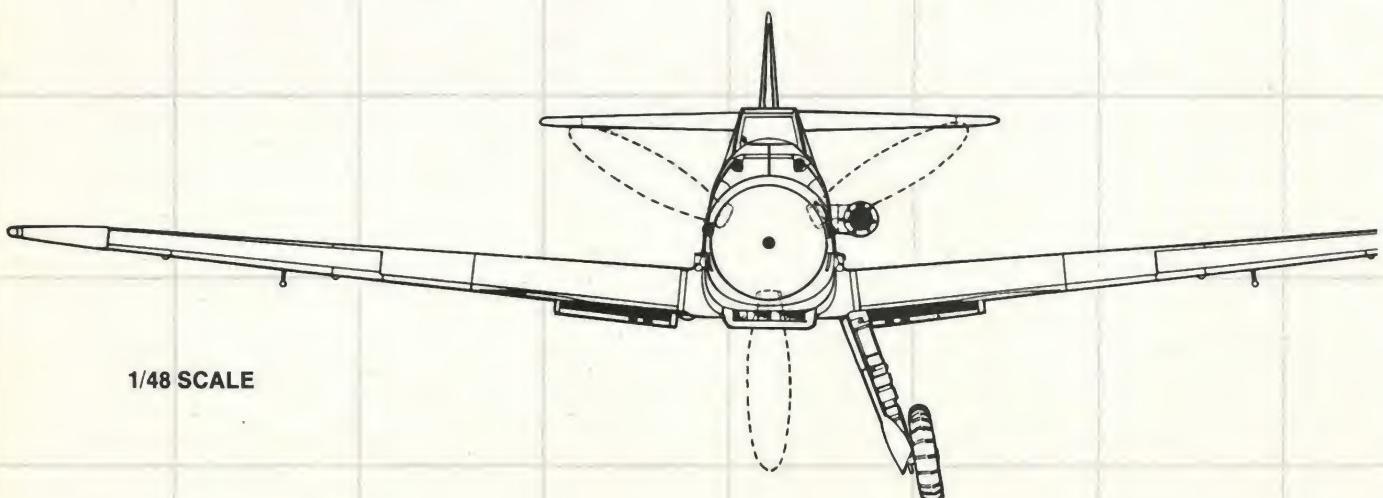
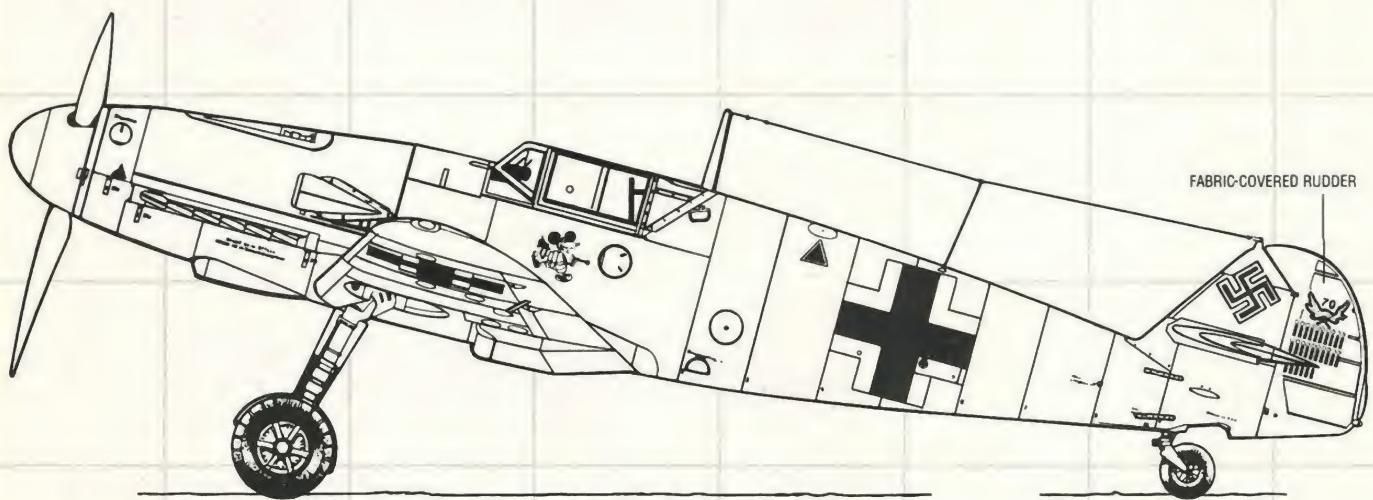
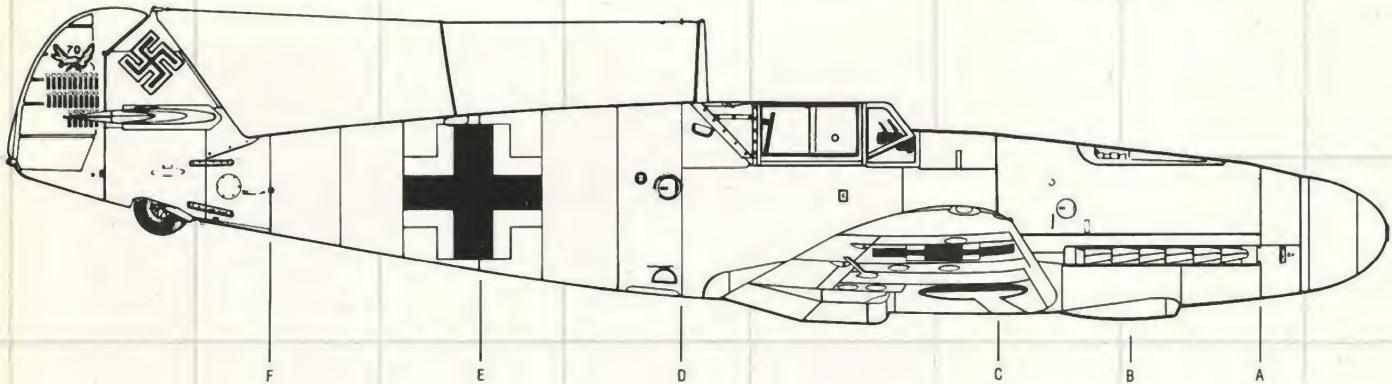
General Galland's description of his victory markings bothered me; all photos and drawings of his combat aircraft show the numeral 69 and then the decoration, while he specifically mentioned 70. However, on rereading his book, *The First and the Last*, I found

that he specifically states he scored numbers 68, 69, and 70, was shot down twice, was badly wounded, and was notified of being the first to be awarded the Oak Leaves and Swords on his birthday, June 21, 1941. Galland described these combat missions, and mentioned that even at that time he'd had two identically marked aircraft at his disposal, and lost them both that

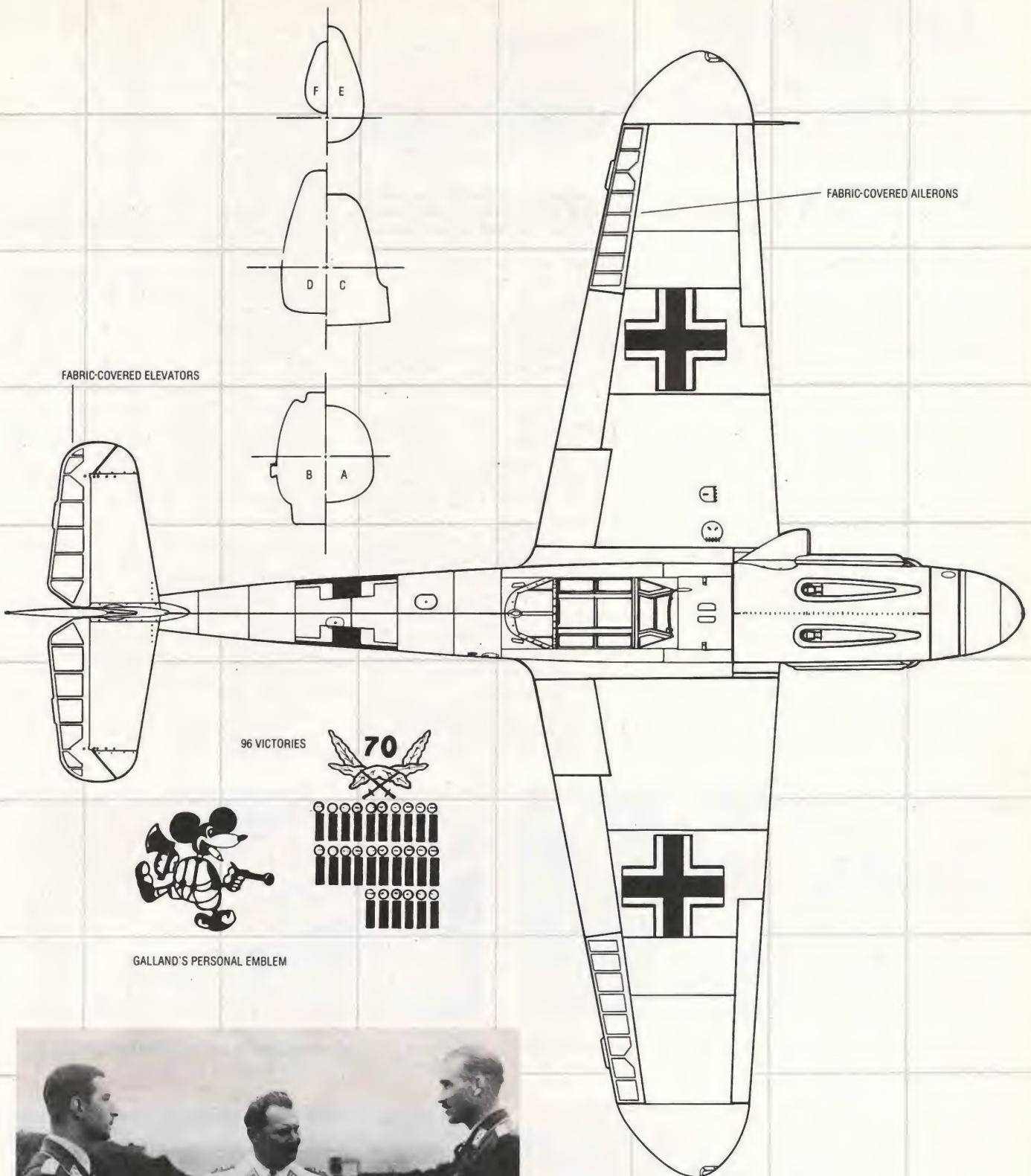
**PREPARED FOR
FINESCALE MODELER**
BY
Bill Koster

MESSERSCHMITT Bf 109F

Manufacturer: Bayerische Flugzeuge Werke A. G.
Power plant: One 1,350 horsepower Daimler-Benz DB601E 12-cylinder liquid-cooled inverted V engine
Dimensions: Wingspan - 32' 9"
Length - 29' 8"
Height - 8' 6½"
Weight: Wing area - 173 square feet
Gross - 6,396 normal load
Performance: Maximum speed - 391 mph
Range - 528 miles with drop tank
Armament: Two MG 17 7.9 mm machine guns in cowl
One MG 151/15 15 mm cannon or
One MG 151/20 20 mm cannon firing through spinner



1/48 SCALE



Smithsonian Institution, National Air and Space Museum, Photo No. 11941

Major Adolph Galland is the man on the right in this photo taken early in World War Two. The man in the middle is Reichsmarschall Herman Göring, and at left is Galland's fellow ace, Major Werner Mölders.



Fig. 2. After the seams are filled and the fabric surfaces painted, the model is ready for foil. Note how the aft fuselage opening behind the seat has been filled with Micro Kristal-Kleer.

day. I assumed that because of some delay in confirming a victory, the rudder on his replacement 109 was painted with "69" and widely photographed, and when the bare-metal 109s were prepared, he took the opportunity to correct that error.

Construction. Having finally confirmed this unique 109, I was ready to build it. There are only two Bf 109F kits in 1/72 scale; the older Frog kit (No. F192F) and a nice, new one from Heller (No. 081). Unfortunately, a quick check with drawings and dimensions showed that Heller's 109F has the same fault as its G and original K release: The aft fuselage is about $\frac{3}{16}$ " too short, and accordingly out of proportion.

The Frog kit, though old, is nearly exact in outline and dimensionally accurate. I decided to use the Frog kit and incorporate the better interior of the Heller kit by simply trimming away

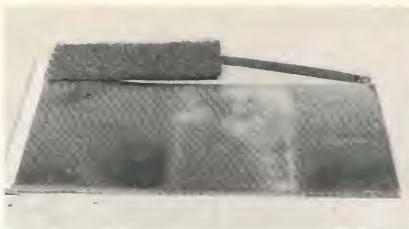


Fig. 3. Bare Metal Foil can be "grained" by scrubbing it with a Scotch-Brite scouring pad guided by a straightedge. The multi-panel effect is achieved by shifting the grain of each adjacent panel.

the locating pins and mounting it in the Frog fuselage, Fig. 1. Additional consoles, throttle quadrant, and trim wheel were added using sheet plastic, pieces of sprue, and instrument panel decals.

German aircraft of this vintage usually had the interiors of wheel wells and gun bays painted RLM Gray 02, with Black-gray 66 used for all surfaces in the cockpit. I had to mix the latter myself, since it's not available premixed. After the fuselage was assembled, I filled the seams with putty and sanded smooth. I used a coat of gloss white as a primer and wet sanded again to get a smooth, sealed surface. The fuselage aft of the seat was sealed off with Micro Kristal-Kleer and painted RLM 66 when dry, Fig. 2.

The leading edges of Frog's wings were almost square, so I rounded them off with sandpaper. After I added the wings, I repeated the seam filling pro-

cess. The Frog kit's single exception to outline accuracy is in the horizontal stabilizer. I rounded off the tips to match my references. I painted the fabric elevators silver and the rudder yellow.

Applying a bare-metal finish. At this point the model was ready for the metal finish. My favorite is Bare Metal Foil*, a sheet of thin, self-adhesive foil that not only looks like metal, it *is* metal. The foil is so thin that it will show anything on the surface, even a stray fiber from a cotton swab.

Bare Metal Foil is shiny, like chrome or highly polished aluminum. Jim Hawley developed a technique of burnishing the foil with a Scotch-Brite pad to remove the gloss and provide a "grain" effect, Fig. 3. Scotch-Brite is a synthetic scrubbing pad found at most grocery stores. A realistic panel effect can be made by alternating the grain of adjacent panels. By shifting the foil on each panel 90 degrees to adjacent panels, you can easily make a realistic, multi-paneled surface that looks even better in real life than in my photos. You can duplicate the panel arrangements from photos of real aircraft, or use the kit panel lines.

All surfaces should be washed and then, just before a panel is covered, cleaned again with a soft cloth and denatured alcohol to remove any oily fingerprints. Begin by covering the wing tips, and then the leading and trailing

*Bare Metal Aluminum Foil, 19419 Ingram, Livonia, MI 48152.



Fig. 4. Measure the size of a panel with dividers, then cut a piece of foil slightly oversize.



Fig. 5. Use a blunted toothpick to burnish the foil around tight curves and into small depressions.



Fig. 6. To avoid leaving gaps, trim excess foil on the outside of the panel line.



Fig. 7. To cover the wing tips the foil is split, wrapped over the wing tip edge, buffed down, and trimmed.

edges. Measure the size of the panel you want to cover with dividers, Fig. 4, allow a little extra, and transfer the measurement to the foil. Cut out the piece with a straight edge and a sharp knife blade. Lift the foil off the waxed backing, and stick it in place. When it's positioned, buff it down with a soft cloth, a cotton swab, or a blunted toothpick on round surfaces, Fig. 5.

I use kit panel lines as guides where possible, trimming off the excess foil on the outside of the panel line, Fig. 6. When the adjacent panel is covered, overlap the foil at the panel line. Don't try to butt the foil panels; you will inevitably wind up with gaps.

Cover the top of the wing tip first, neatly folding the excess foil over the edge, Fig. 7. Trim this as close to the edge of the underside as possible, without cutting out to the edge. Then cover the underside and trim that to overlap the first piece, again avoiding the edge. I work from the leading and trailing edges in toward the center, Fig. 8. It doesn't matter which direction you go on the fuselage.

Decals. Decals are applied as you would on any other surface. However, any carrier film will show, so all decals should be trimmed as close to the color print as possible. I used Microscale decals for the national insignia and found Galland's "Mickey Mouse" and rudder markings on an old sheet in my decal box. I found appropriate swastikas on an old, out-of-print ABT decal sheet, but these are also available from Microscale. The "69" was cut away and replaced with a red "70" from another ABT sheet; numbers from HO scale model railroad numeral sheets will do nicely. Miscellaneous markings and fu-



Fig. 8. Apply foil from the edges of the wings and work inward.

selage frame numbers also came from Microscale sheets, Fig. 9.

Small details. Landing gear struts, wheels, gear doors, and the antenna were glued on with Hot Stuff Super T for maximum strength and speedy assembly. I drilled holes in the ailerons for the mass balances from the Heller kit. I moved Frog's antenna mast forward to the correct position on the fixed rear section of the canopy. Fuselage machine gun barrels are lengths of very small metal tubing. As a final touch, red and green Floquil "Lustre-Glaze"** was painted directly onto the foil to represent the navigation light lenses. These are transparent colors produced for staining glass.

All that was left was a big sigh of relief. After 14 years of searching, "my" 109 was found, documented, and built. Now, if anybody has a photo of General Galland's Me 262 . . . !

FSM

REFERENCE

Galland, Adolph, *The First and the Last*, Holt, New York, 1954.

*Lustre-Glaze, Floquil-Polly S Color Corp., Route 30 North, Amsterdam, NY 12010.

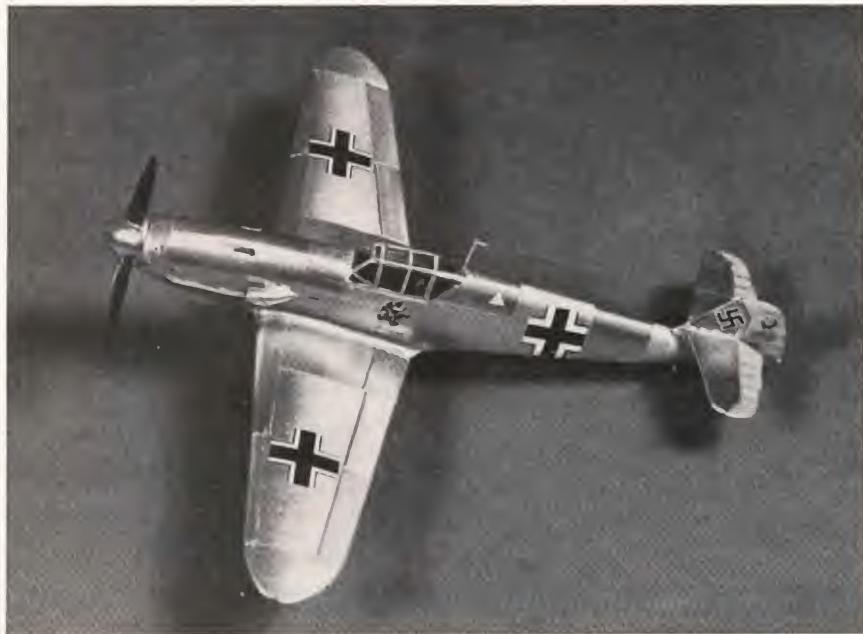


Fig. 9. Wayne applied appropriate decals from his spares box, and modified the victory markings to accurately represent Galland's tally of 70.

SCALE DOCUMENTATION	
SCALE DRAWINGS	PHOTOS - BOOKLETS
MODEL PLANS	
1983 AIRPLANE CATALOG \$2.60 104 PAGES	
REPLA-TECH INTERNATIONAL	
48500 MC KENZIE HWY. VIDA, OREGON 97488	

SCRATCH BUILDING SUPPLIES

Dry Transfer Lettering

Catalog No. 4 — \$2.00



Clover House

Post Office Box 62D
Sebastopol California 95472

Scale Naval Decals!



South Bay Miniatures

Apt. D1, 151 89th St., Brooklyn, N.Y. 11209



**101st Airborne
Military Models**

Giant Discounts on
Armor, Aircraft, Ships, Paints and Supplies

Send \$1.00 for our catalog
P.O. Box 46, Manchester, TN. 37355
Visa & MC Accepted

QUALITY 35mm AVIATION
TRANSPARENCIES

Including:
military, civilian, homebuilt, antique, and museum display

AVIATION PHOTOGRAPHICS

P.O. BOX 717 DEPT. FS
CHESAPEAKE BEACH, MD.
20732 USA

Send \$1.00 for
current list
and sample slide



KCC is a bi-monthly publication
of ads and info on collectable
plastic kits and related items.
Pictures of rare kit box art and
early news of new and re-issued
kits are included. Send \$1.00
for current issue and subscrip-
tion information.

JOHN W. BURNS • 3213 HARDY DR. • EDMOND, OKLA. 73034

The SOURCE For...

Casting resins and
mold making materials

"Make one or
one thousand
with Castolite."

Catalogue \$1.00

CASTOLITE

Dept. FS 383,
P.O. Box 391
Woodstock, IL 60098

Scratchbashing a boom truck

This transformation begins with MPC's 1/25 scale Stutz Bearcat

BY MIC GREENBERG

I FIRST DISCOVERED the possibilities of modeling trucks in 1/25 scale when I came across the MPC Stutz Bearcat (kit No. 3151). This kit offered beautiful detail, a great set of rims with separate rubber wheels, excellent fenders, a good radiator, adequate front springs and axles, and above all a finely molded Wisconsin Beaver four-cylinder engine. There were other excellent parts, too, including a set of clutch and brake pedals, a well-crafted steering wheel, and chrome-plated but usable gear shift and emergency brake levers.

My boom truck has no particular prototype, but is based on my research on 1915 commercial vehicles and boom trucks I've seen on the Northern Cali-

fornia coast. Boom trucks are not to be confused with wreckers; although there are many similarities, boom trucks were used primarily for lifting and were most often seen in junkyards and wharf areas.

The new cab. I break vehicle construction into large subassemblies which are built, painted, and handled one at a time. This model called for three major subassemblies: the cab, the chassis (including fenders, axles, and engine), and the body (including the boom, gallows, and bed superstructure), Fig. 1.

I found a side-view photo of a 1916 Peerless TC-2 two-ton truck in an old *American Licensed Automobile Manufacturers Handbook*. I had the photo blown up to 1/25 scale at a photostat shop, Fig. 2, then traced the outlines of the cab onto artist's vellum tracing pa-

Mic's boom truck was made from classic car kits, parts from tank recovery vehicle kits, model railroad and model ship details, and sheet styrene.

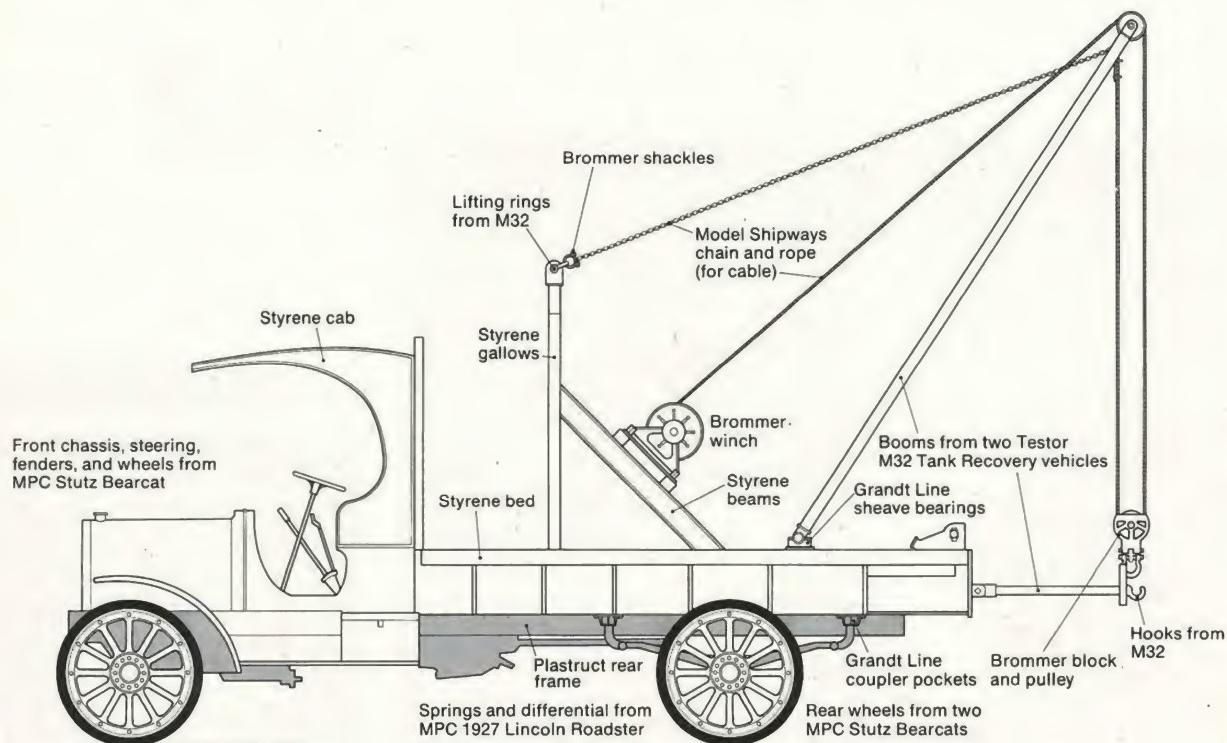


Fig. 1 OVERVIEW OF THE BOOM TRUCK



Fig. 3. The cab was made from sheet styrene. Note the thin strip which runs around the forward edges of the sides. The thin floor provides a bonding surface to mount to the styrene box on the chassis.

per (available in art supply stores). Next, I gave the vellum a coating of graphite on the back side by rubbing a pencil sideways along the lines. I taped this "smudge sheet" to .020" sheet styrene and drew over the outline of the cab, transferring the image to the plastic. The slight depression caused by the pressure of the pencil made a track for the knife. I used this method to cut two identical cab sides.

I tacked the two cab sides, back, floor, and roof together with tiny dabs of tube cement, followed with liquid cement applied with a toothpick. I attached a narrow strip of thin styrene to



Fig. 4. The rear frame of the truck is Plastruct channel. The dual rear wheels came from two MPC Stutz Bearcat kits. The styrene box that replaces the kit's seat also serves as the bonding surface for the scratchbuilt cab.

the leading edges of the cab to form a T-shaped cap, Fig. 3.

Chassis. I sawed through the MPC Stutz chassis just behind the seat and used the front end without modification. This included the axle, radiator, engine, fenders, and running boards. I removed the engine bonnet and added a rusty .020" piano wire support (I placed the wire outdoors to rust naturally) from the fire wall to the top of the radiator. I replaced the Stutz seat with a styrene box, Fig. 2. I inverted the Bearcat steering column to create the upright angle of the truck's column.

The rear frame was scratchbuilt from

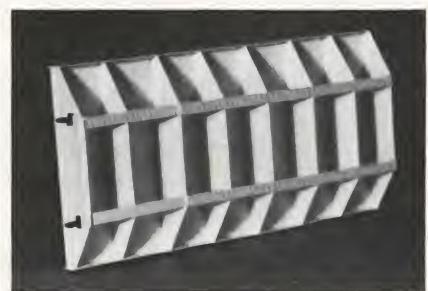


Fig. 5. The truck bed was built up from .020" styrene. The thin lengthwise strips match the frame, providing a large bonding surface.

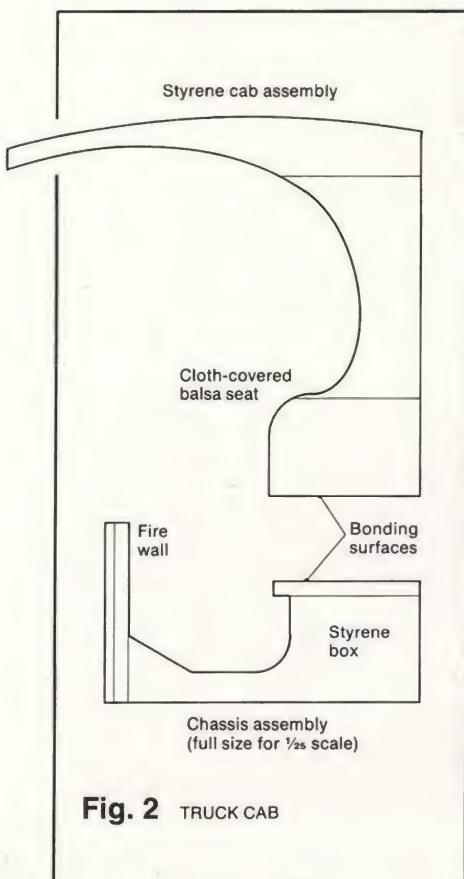


Fig. 2 TRUCK CAB

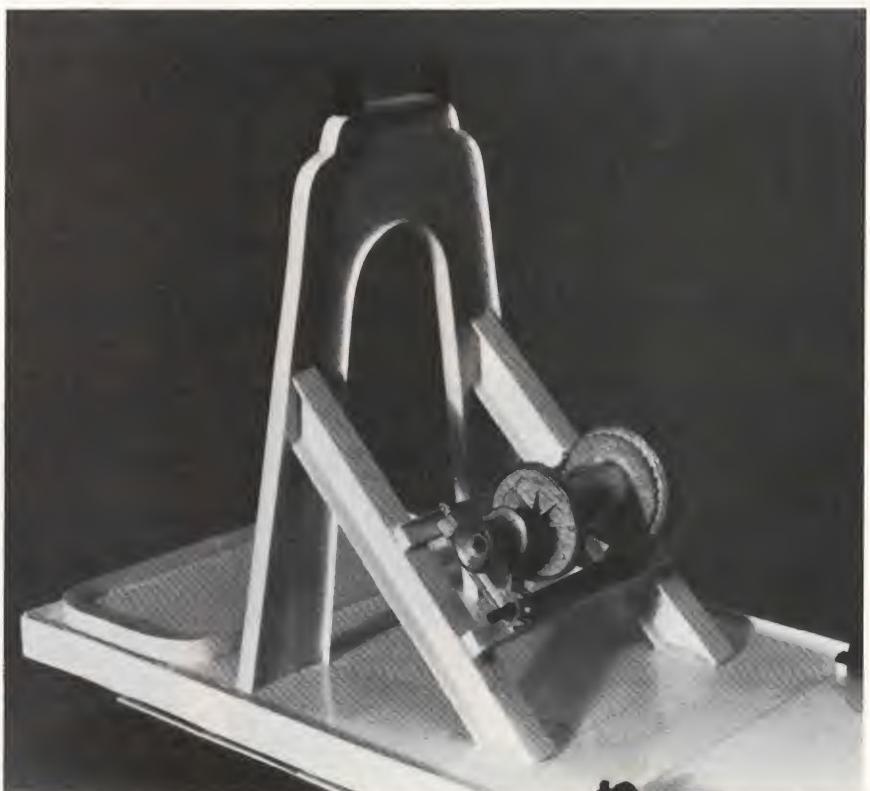


Fig. 6. The boom gallows also has thin styrene strips around both the inside and outside edges. Here the Brommer winch drum has been positioned temporarily to determine the position of the winch mounts. Note the angled sheet styrene beams.

Boom trucks were used for lifting heavy objects such as this engine taken from another MPC Stutz Bearcat kit.



1/4" Plastruct* channel, Fig. 4. I used the springs and differential from an MPC 1/25 scale 1927 Lincoln Roadster (kit No. 3152) and attached them to the chassis using Grandt Line** No. 5006 HO coupler pockets.

The bed and the eight supports underneath it were made from .020" sheet styrene, Fig. 5. I used a NorthWest

Short Line*** Chopper to duplicate the angles on the supports. I glued the supports to the underside of the bed. When they were dry, I attached two styrene strips along the bottom of the bed supports. These strips provided a bonding surface for cementing the bed to the frame.

Boom and gallows. I used the vellum transfer method to produce the boom gallows from .020" sheet styrene.

A thin strip of styrene was glued to the inside and outside edges of the gallows. I also produced two large "I" beam supports from sheet styrene and cemented these at 45-degree angles to the gallows, Fig. 6.

I used the booms from two Testor's 1/35 scale M32 Tank Recovery Vehicles (kit No. 806) for the boom and standoff sway bar at the truck's rear. The lift rings from the M32 kit were attached to the top of the boom gallows, then the boom and standoff sway bar were glued in stationary positions on pillow blocks.

*Plastruct, 1161 Monterey Pass Road, Monterey Park, CA 91754.

**Grandt Line Products, 1040B Shary Court, Concord, CA 94518.

***NorthWest Short Line, P. O. Box 423, Seattle, WA 98111.



Fig. 7. The boom from the M32 has been attached to the bed. The chain has not been permanently attached yet.



Fig. 8. Mic dry-fitted all the major subassemblies to get an idea of the overall appearance of the model.

Mic's boom truck moves an old wreck. Model railroad and ship parts provide details such as the chain, cable, winch, block, and pulley.



from Grandt Line No. 300-3511 O scale 60" Mine Head Frame Sheaves, Fig. 7. A Model Shipways* chain runs from the end of the boom to the lifting rings on the boom gallows where they are attached with 0 scale shackles by C. H. Brommer** (No. SH-6). I dry-fitted all the major subassemblies to get an idea of how the model would look when finished, Fig. 8.

Finish. I like worn out, tired vehicles with lots of rust, dust, and peeling paint. I airbrushed the boom truck with Floquil paints to simulate painted metal surfaces. My first coat was a mixture of 80 percent Rust to 20 percent Roof Brown. I allowed this base coat to dry for at least a week. The second coat was 70 percent Grimy Black, 20 percent Reefer White, and 10 percent Graphite. I sprayed this on very lightly so that the base coat showed through. The final coat was the finished color. I weathered the model with finely sifted dirt, rust, and powdered pastel chalk.

Final details. I weathered Kappler Mill & Lumber Company's*** scale model wood for the truck bed and running

boards. I used one of the large headlights in the Stutz kit but mounted an M. V. Products**** lens in it for a more realistic look. The winch drum came from Brommer's American Hoist and Derrick (kit No. DE-310), and the block and pulley from Brommer's No. LB-16. The winch cable is cotton line from Model Shipways painted with a wash of Floquil Rust and Roof Brown. I made the seat from balsa wood because it was easy to form the cushion shape, then covered it with a piece of cloth from an old T-shirt.

Since I chose to finish each subassembly individually, I attached the seat to the cab and the cab to the chassis with Devcon 5-minute Epoxy. Epoxy allows permanent bonding of the components without the risk of damaging the finish. The steering wheel and brake lever would have interfered with the installation of the seat had I attached the cab to the chassis first. The styrene box on the chassis provided a large bonding surface for the mounting of the cab.

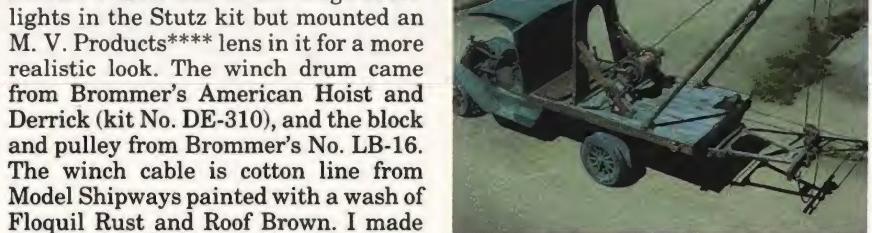
The finished model is both big and imposing yet delicate and mechanically interesting. It's not your everyday truck, and it adds an air of realism to scenes of rural America in the twenties and thirties.

FSM

*Model Shipways Co., Inc., 39 West Fort Lee Road, Bogata, NJ 07603.

**C. H. Brommer Models, P. O. Box 93, Lakehurst, NJ 08733.

***Kappler Mill & Lumber Co., 1760 Monrovia, A15, Costa Mesa, CA 92627.



The weathered timbers and rusted frame suggest years of duty through hot summers and damp winters. Note the dual wooden spoke wheels from two Bearcat kits.



The Bearcat front end was used unmodified. Note the single headlight and the water bag draped in front of the radiator. FSM plans to have author Greenberg return for a full explanation of his subtle and convincing weathering techniques.

****M. V. Products, P. O. Box 6622, Orange, CA 92667.



This 1/35 scale diorama depicts an M48A3 on road patrol duty during the Vietnam conflict. The Tamiya model is almost stock, a

fine example of a striking model achieved through careful painting and detailing rather than an extensive rework of the kit.

Modeling a moving pillbox in 1/35 scale

A simple but effective one-model diorama

BY FRANCOIS VERLINDEN

MUCH OF VIETNAM was bad tank country, with trees, bushes, and swamps rendering many areas virtually impassable to armored vehicles. When armor was used, the Vietcong were always present with antitank weapons, and just one man hidden in a tree and armed with two grenades meant a lot of trouble. In many cases tanks were used in convoy duty on the open road, and even the roads weren't easy going; many were mined, and the chief tactic of the Vietcong was ambush.

Even so, because of the heat and the danger from mine detonations many tank crews preferred to ride on top of the vehicle, thereby exposing themselves to small arms fire and rocket-propelled grenades. Such a crew is the subject of this 1/35 scale diorama. Even though their M48 is not dug in, they've built a sandbag parapet on the turret roof to afford extra protection against close-range attacks, virtually making their tank into a moving pillbox.

Changes to the M48. The Tamiya M48A3 kit (No. MM220) is beautifully detailed and required little in the way

of modifications to build the vehicle represented in my diorama. Before starting basic assembly I added evidence of battle damage to the fenders as is often seen in photos of Vietnam M48s. I removed parts of both front fenders and reworked them with a razor saw and knife, including thinning them with sandpaper. After thinning, I formed dents by heating various spots and pushing on them with the blunt end of a pencil while the plastic was soft, Fig. 1.

Most of the work in this project involves the turret. I assembled it in accordance with the kit instructions, but kept the Xenon searchlight, machine gun, and spare road wheels separate for ease of painting. I positioned the gun barrel at the lowest possible declination and filled the resulting gap between the gun mantlet and turret with epoxy putty modeled to match the fabric gun mantlet cover of the kit.

Next I glued the spare track links on the turret, referring to pictures of the



An overall view of the moving pillbox diorama from behind the vehicle. Note how the basic earth color on the ground has also been worked onto the lower surfaces of the tank. The vast expanse of scenery behind the model is a photographic background.

real thing. I needed six links on each side of the turret to serve as supports for the sandbags, but the kit includes only six spares. I took the extra ones from a second kit, which I'll use later for another project where I won't need the spare links.

Building the sandbag parapet. The sandbags are made from epoxy putty, Fig. 2. I start by kneading the putty into a $\frac{1}{4}$ "-thick roll, cut the roll into $\frac{3}{8}$ "-long pieces, then form each piece into a rectangular block. The individual bags were piled on top of the spare track sections and other turret stowage and on top of each other, conforming to the shape of the turret.

Referring to pictures is essential in achieving the right look for the stacked sandbags. While soft, each bag was gently pressed into its neighbors to give it a natural and realistic shape. I pressed a piece of fine wire mesh into the visible portions of each bag to impart a fabric-like texture, then scribed the sewn seams with a sharp pencil. When all the sandbags had been formed, placed, and textured I set aside the turret subassembly to dry overnight.

Painting and weathering. I started painting by spraying the whole model with Pactra IF30 Khaki, following immediately with a very light coat of IF28 Dark Earth sprayed on and around the

Fig. 2 MAKING THE SANDBAGS

Work epoxy putty into $\frac{1}{4}$ " roll.

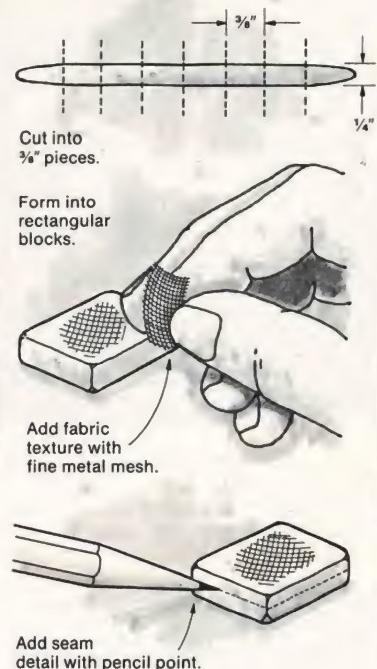


Fig. 1. The assembled M48 just before painting. Note the thinned and damaged fenders, the surgical-tape cover on the searchlight, and, of course, the dozens of epoxy putty sandbags.

Fig. 3. This close-up shows the texture and seams on the sandbags, the scuffed paint around the driver's hatch, and the cord tow cable. Modifications to the driver figure include dust goggles, a helmet-mounted microphone made from fine stretched sprue, and the name "DUFFY" painted on his tanker's helmet.

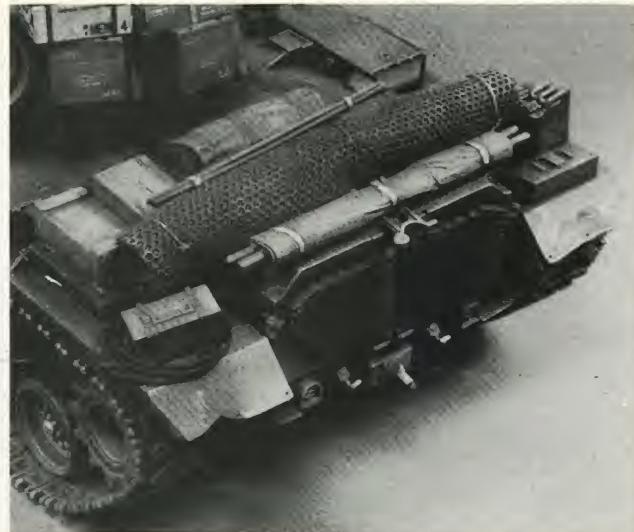


running gear, fenders, and the hull rear and bow. After allowing the paint to dry for a few hours I gave the model a heavy coat of ordinary varnish cut half and half with thinner. The varnish is to protect the paint coats, and it must be allowed to dry for at least two or three days so it won't wear off during weathering.

The first step in weathering the M48 was to treat the entire model with a wash consisting of 8 parts turpentine



Figs. 4 and 5. (Left) The focal point of the diorama is the heavily sandbagged turret roof of the M48A3. (Right) The rear deck of the tank includes a roll of chain link fencing, a common item of extra equipment seen on armored vehicles during the Vietnam



conflict. The fencing was erected around the vehicle at night as an added safeguard against rocket-propelled grenade attacks. The coiled refueling hose on the left fender was made from a length of soft wire solder.



Fig. 6. The partially completed diorama base before addition of the vehicle. Here static grass is being applied over wet earth-colored paint. The planks over the shallow ditch help direct the viewer's eye toward the tank.

and 2 parts flat black. This serves to fade the paint and add an impression of depth. Apply the wash to one small area at a time so you can soak up excess color with a soft cloth while the wash is still wet.

I highlighted details by first dry-brushing with a medium earth paint, followed by an olive green shade, then by a light sand color, and finally by some red-brown to represent dust, especially on the running gear and fenders. The sandbags were dry-brushed separately with Humbrol HM8 Khaki Drill and a medium earth color.

To simulate scuffed and worn paint I lightly dry-brushed a mixture of silver and flat black around the hatches, hand grabs, and engine access panels and doors, Fig. 3. The same mixture is used to make a chipped paint effect, but it is applied with a fine-point brush. I used heavily thinned Burnt Sienna oil paint to simulate rust, especially on the bent and scratched fenders.

The track, which comes molded in

silver-gray polyethylene, was painted flat black and dry-brushed brown-gray on the rubber parts and treated with the silver-black mixture on the metal parts. Thinned Burnt Sienna was flowed around the track connectors and guide teeth.

The fabric searchlight cover was made from 3M Micropore surgical tape. After painting I added the searchlight assembly to the gun mantlet.

Adding figures and extra equipment. The M48A3 kit includes tank commander and driver figures, and I took the other two crew members from Tamiya's U.S. Armoured Troops set (MM-217). I modified one of them with a tropical hat made from epoxy putty, Fig. 4.

Next the long search for acceptable extra equipment commenced. Bed and tent rolls were made from tissue paper; smoke grenades and Coke cans were made from sprue. The boxes of C rations are Modelworld* accessories. The rolled wire fencing, Fig. 5, is made from a fine, cotton-mesh fabric (similar to that used to make wedding and mourning veils), rolled up, secured with straps, then painted a rusty color. The ammunition crates, ammo pouches, and M16 rifles were taken from various accessory kits. All equipment and figures were glued on the model with rubber cement.

Building the diorama base. The bottom portion of the diorama was cut from a piece of wood-textured hardboard wall decoration, and the groundwork on top of it is a slab of fine-grain Styrofoam. The ditch was dug with a sharp knife, and the Styrofoam was then glued to the base and covered with

Celluclay** to add relief and texture.

While the Celluclay was wet I sprinkled on some fine sand and pebbles and lightly pressed them into the groundwork. Once the Celluclay had dried I painted it with a very dark earth shade, and sprinkled static grass on the edges of the road before the paint dried, Fig. 6. The groundwork was highlighted by dry-brushing it with various earth and sand colors, and the grass was treated in the same way with different tones of green, yellow-green, and earth.

The patch of tropical vegetation in one corner of the diorama is made from HO scale palm trees. After painting the individual leaves I stuck them into a ball of epoxy putty to keep them together. These "plants" were then added to the diorama with white glue and the epoxy portions covered with static grass.

The last step was to fasten the tank to the diorama with white glue. The finished model, though simple to build and paint and not a conversion, looks a lot different from a stock, out-of-the-box M48A3.

FSM

REFERENCES

- Dunstan, Simon, *Vietnam Tracks: Armor in Battle 1945-75*, Presidio Press, Novato, California, 1982.
- Mesko, Jim, *Armor in Vietnam, A Pictorial History*, Squadron/Signal Publications, Carrollton, Texas, 1982.
- Zaloga, Steven J., *M47 and M48 Tanks, Osprey Vanguard No. 29*, Osprey Publishing Ltd., London, 1982.
- Zaloga, Steven J., and James W. Loop, *Modern American Armor*, Stackpole Books, Harrisburg, Pennsylvania, 1982.

*Modelworld, Berlaarsestraat 36, 2500 Lier, Belgium.

**Activa Products, P. O. Box 1089, Taunton, MA 02780.

PASTEL WEATHERING KIT



The six basic earth tone pastels in our weathering kit will bring life and texture to your models.

Follow the recommendations of the masters of modeling.

Pastel weathering is an easy and effective way to make your models look "used," realistic, and "alive."

See your dealer - \$7.95
Order direct \$8.50 inc. postage.

**Imported
Specialties**

3655 Sullivan Ave.
Columbus Ohio 43228
USA

YOUR SOURCE FOR
**NWST SAGAMI
CAN MOTORS**



Heavy-duty, high quality precision can type motors combine high efficiency with their small size & silent, maintenance free operation. 12 vdc.

Round style can motors are available in 22 sizes ranging from 12x20mm (1/2" x 3/4") to 32x53 mm (1-1/4" x 2"), all available with double 15 mm (9/16") shafts. Take power from both ends or use one end to mount a flywheel. Flat can & open frame style motors also available.

- Slow starting-less than 2 volts
- Broad operating RPM range
- Long lasting sintered bronze bearings
- 5 pole skewed armature
- Powerful, long life ceramic magnets
- Maintainability-spare parts available for replacement in cases of wear, damage, or mistakes.

See your dealer first. For further specifications, send 75¢ for our "Sagami Specifications & Usage Booklet."

FOR BETTER OPERATION FROM YOUR MODELS

NorthWest Short Line
BOX 423 SEATTLE, WASHINGTON 98111

FSM: Your step-by-step guide!



Wayne E. Moyer's 1/72 scale Bf 109F modeling project. Wayne E. Moyer photo.

In FINESCALE MODELER, you'll discover modelbuilding projects presented with exacting step-by-step instructions, explanatory drawings, and detailed photos. Each one of FSM's step-by-step projects will guide you in creating a superb scale model—and will enhance your modelbuilding skills for future projects! Case in point: Wayne E. Moyer's feature on modeling Adolph Galland's Bf 109F in 1/72 scale (pages 47-51). In Wayne's article, you'll learn how to construct a unique miniature aircraft—and you'll discover techniques useful for applying a bare-metal finish to any model! Make FSM your step-by-step guide to modeling fun. Subscribe today!

SUBSCRIBE!

DEPT. 3351, FINESCALE MODELER

1027 NORTH SEVENTH ST., MILWAUKEE, WI 53233

YES! Enter my eight-issue subscription to FINESCALE MODELER starting with the next issue (FSM is published quarterly).

Enclosed is my payment of \$15 (\$19 outside the U.S.)
 Please bill my charge card account as marked below for \$15 (\$19 outside the U.S.)

NAME _____

STREET _____

CITY _____

STATE, ZIP _____

Charge to: MasterCard VISA EXP. DATE _____

CARD NUMBER _____

SIGNATURE _____

Single copy price: \$2.25; outside the U.S., \$2.75

If you don't wish to clip your magazine, copy the necessary information including department number on a separate sheet.

© KALMBACH PUBLISHING CO.

SUPER GLUE FOR PLASTIC KITS

PLASTI CA++ ZAP™

Rapid initial "tacking" cure in 10-20 seconds, full cure in 1-3 minutes!

Cures cleanly, clearly! Will not attack painted surfaces!

Excess adhesive removed with Z-7™ Debonder.

Can be used with "Zip-Kicker" for ultra fast building!

Non-flammable/non-sniffable!



1/2 oz. net wt. PC-19 \$2.98
(9.47 gm.)

Plasti-Zap/CA++™ is a specially formulated cyanoacrylate adhesive designed for assembly of plastic model kits or plastics "scratch building" projects. The adhesive chemistry will screen-out any mold release agents present on parts, and bonds all types and formulations of plastics used by the various plastic kit manufacturers.

THIS PRODUCT IS GUARANTEED 12 MONTHS SHELF LIFE

Planes



Cars



Rockets



Miniatures



Available From

West  House of Balsa
20134 STATE
CERRITOS, CA 90701
(213) 860-1276

Central  robart
INSTRUMENT SYSTEMS INC.
(312) 584-7616

East  FTE
FRANK TIANO ENTERPRISES
127 FAIR ST
KINGSTON, NY 12401
(914) 339-4438

 **Pacer
Technology
& Resources, Inc.**
1600 DELL AVENUE ■ CAMPBELL, CALIFORNIA 95008 ■ (408) 379-9701
TELEX: 172435 (Pacer Tech Cmpl) (800) 538-3091 (Except California)



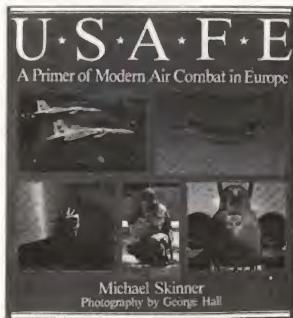
PACER TECH®

...setting the pace for technology

FSM BOOK BRIEFS

FINESCALE MODELER invites publishers to submit review copies of books and magazines related to modelbuilding. Send all material to FSM Book Briefs, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

BY BURR ANGLE



USAFE, a Primer of Modern Air Combat in Europe

Author Michael Skinner and photographer George Hall recently toured most major bases of the United States Air Forces in Europe where they interviewed enlisted men and officers of all ranks, especially fighter pilots, and took many photos of such planes as the F-4, F-15, F-111, A-10, OV-10, and F-5E on the ground and in the air. Their findings and photos are printed in an 8" x 8 1/4", 138-page, soft-cover book that describes the current state of USAFE (pronounced "you-soff-ee") and that includes glossaries of abbreviations and fighter pilot slang, and a table of USAFE aircraft markings. In addition to descriptions of U.S. planes, bases, logistics, and air defense, there are brief discussions of other NATO air forces and the Soviet air forces.

Included are 47 excellent black-and-white and 22 color photos. The book is published by Presidio Press, 31 Pamaron Way, Novato, CA 94947; the price is \$9.95.



NZPAF/RNZAF Aircraft Colour Schemes, Markings, Photographs, Histories, Volume 1

Written and published by Warren P. Russell, this 136-page, 6 1/8" x 9 1/4", soft-cover, wire-bound book contains 33 pages of drawings and 70 black-and-white photos showing the color schemes and markings on a number of aircraft used by the New Zealand Professional Air Force (1923 to 1934) and Royal New Zealand Air Force (1934 to the present).

The aircraft covered are the AESL Air-tourer T6/24 and NZAI Airtrainer CT-4B; Airspeed Oxford AS.10 Mk.1 and Mk.2, AS.42 and AS.43; Airspeed Consul AS.65, Auster J/5; Auster C.4 Antarctic; Avro 504K and 504L; Avro 626; Avro Anson Mk.1 and Mk.12; BAC Strikemaster Mk.88; Bell 47G Sioux; and Bleriot Type XI Monoplane.

Other chapters provide a brief history of the New Zealand air forces; descriptions of paint colors, fin flashes, and roundels; and inventories of military and training aircraft operated by New Zealand forces since 1913. Warren presents the information in ways that make it especially useful to modelers.

The book is sold by New Zealand Aero Products, P. O. Box 17, Invercargill, New Zealand, for NZ\$16.00 plus NZ\$2.00 for postage outside New Zealand. Check with your bank for the exchange rate of U. S. dollars to NZ dollars.

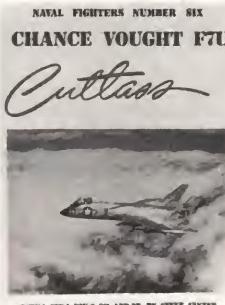


Arco Illustrated Guides

Arco Publishing Inc., 219 Park Avenue South, New York, NY 10003, now distributes in the U. S. and Canada an interesting series of reference books on such topics as the aircraft of the modern U. S. and Soviet air forces, the Israeli Air Force, surface ships of the U. S. and Soviet navies, modern submarines, and airliners. The books are published by Salamander Books Ltd., London, England.

Each 4 1/4" x 8 1/4", hard-cover volume contains several hundred color photos, paintings, and drawings, as well as tables of statistics and brief histories of ship and aircraft types. Each is 160 pages, except the airliners book which is 280 pages; the price is \$9.95 each except the airliners book which is \$10.95.

All of the authors are authorities in their fields. For example, the air force guides are by Bill Gunston; the airliners volume is by William Green and Gordon Swanborough.



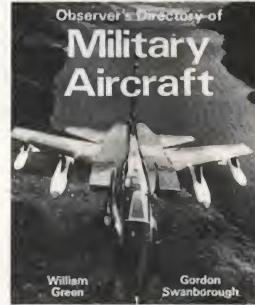
Chance Vought F7U Cutlass

The Vought Model V-346A won a Navy design contest for a jet-propelled, carrier-based, naval fighter on June 25, 1946, and

the type was designated XF7U-1. Later variants were the F7U-1, F7U-3, 3M, and 3P. Cutlasses served with the U. S. Navy through the early and mid-1950s.

Steve Ginter's 8 1/2" x 11", 106-page, soft-cover book on the Cutlass contains 233 photos (3 in color), many drawings of aircraft details, and extracts from flight test and pilot reports. Other sections describe the deployment of Cutlasses among Navy squadrons. The photos and other data are valuable to any modelbuilder interested in this pioneer fighter.

The book is available from the author at 1754 Warfield Circle, Simi Valley, CA 93063; the price is \$13.95.



Observer's Directory of Military Aircraft

Compiled by William Green and Gordon Swanborough, this 256-page, hard-cover, 7 1/2" x 9 1/2" volume contains 694 black-and-white photos, 239 3- or 4-view silhouettes of aircraft by Dennis Punnett, and statistics and notes about 301 aircraft currently used by the armed forces of all nations. The aircraft are arranged alphabetically by type and manufacturer; there is an index. The book is published by Arco Publishing, Inc.; the price is \$16.95.

The information on surviving examples of old aircraft is especially interesting. For example, about 40 Spanish license-built Bücker Jungmanns (a 1934 design) are still used by the Academia General del Aire and at least 60 air forces still fly the C-47.



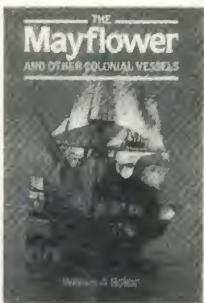
Air War over Southeast Asia

The second of Lou Drendel's projected three volumes on aerial warfare in Vietnam, this book covers the period 1967-1970. This 8 1/2" x 11", 80-page, soft-cover book contains 234 photos (13 in color) and 11 paintings by the author. Land- and carrier-based airplanes and helicopters of the U. S. military are covered thoroughly; those of the other combatants receive less coverage.

The author is convinced that American air power could have inflicted unbearable losses on the North Vietnamese early in the war, saving thousands of lives. He is con-

REFERENCES FOR THE SERIOUS MODELER

From The Naval Institute Press



THE MAYFLOWER AND OTHER COLONIAL VESSELS By William A. Baker

This book provides a comprehensive history of the design, construction, and rigging of both the larger colonial ships and the small shallops, pinnaces, barks, and ketches through extensive illustrations and an authoritative text.

A highly respected naval architect and ship historian, Baker supervised the reconstruction of more than two dozen colonial vessels. He is probably best known for his replica of the *Mayflower* that made its own historic crossing of the Atlantic in 1957.

The Mayflower and Other Colonial Vessels represents a compilation of data drawn from all William Baker's previous works, the result of a lifelong study of colonial shipbuilding.

1983. 192 pages. 100 illustrations. List price: \$15.95



SOVIET WARSHIPS: The Soviet Surface Fleet, 1960 to Present By John Jordan

Jordan, a noted naval analyst, presents a detailed analysis of the new generation of Soviet surface warships—from the Kynda-class guided missile carriers of the 1960s to the new nuclear powered battlecruiser *Kirov*. The major classes of Soviet surface ships covered are Kynda, Kresta I, Moskva, Kresta II, Krivak, Kara, Kiev, Kirov, and the new destroyers Sovremenny and Udaloy, each of which has a chapter devoted to it. Complete details of each class are given including design, construction, service career, propulsion, weapons and radar. The strategic thinking behind each new concept is examined.

In addition to over 150 superb black-and-white photographs, line drawings of each class are provided with details of fittings and armament. There are also over 30 tables of ship specifications, missiles, guns, and aircraft carried by each class.

1983. 128 pages. 160 illustrations. 33 data tables. List price: \$18.95



BRITISH WARSHIP DESIGN IN WORLD WAR II: Selected Papers from the Transactions of the Royal Institute of Naval Architects By R. Baker, W.J. Holt, J. Lenaghan, A.J. Sims, and A.W. Watson

Immediately after the second world war, the wartime experiences of British warship designers were summarized in a series of papers read before the Royal Institute of Naval Architects, and subsequently published in its *Transactions* for 1947. These papers are first-hand accounts by the people directly responsible for the new shipotypes and innovative designs produced in response to the pressures of war.

Now this important source material, complete with all the original illustrations, is available to the general reader for the first time.

1983. 224 pages. 168 illustrations. List price: \$19.95

Book Order Department, U.S. Naval Institute
2062 General Hwy., Annapolis, MD 21401

FS3A

YES! Please send me... copy(ies) of *The Mayflower and Other Colonial Vessels* (843-3) at \$15.95 each.
 copy(ies) of *Soviet Warships* (878-6) at \$18.95 each
 copy(ies) of *British Warship Design in World War II* (921-9) at \$19.95 each.

I have enclosed my check or money order for \$_____ including \$_____ for postage and handling.
(Postage and handling is \$3.00 for orders up to \$30.00 and \$3.75 for orders of \$30.01 or more. Please add 5% sales tax for delivery within the state of Maryland.)

Bill me.

Charge my



Acct. No.

Credit Card Exp. Date

Signature (Credit card and Bill me charges not valid unless signed)

Name _____

Address _____ City, State _____ Zip _____

Prices subject to change without notice.

A NAVAL INSTITUTE PRESS BOOK

temptuous of advisers and cabinet officers such as Robert McNamara who persuaded U.S. presidents to restrict or even halt bombing in North Vietnam.

The book is published by Squadron/Signal Publications, Inc., 1115 Crowley Drive, Carrollton, TX 75011-5010; the price is \$8.95.



The Famous "F" Series, Revised Edition

The two-seat Waco biplanes of the F series that were built between 1930 and 1942 are among the prettiest and most serviceable lightplanes ever made. This 8½" x 11", 92-page, soft-cover book written and published by Raymond H. Brandly contains 66 black-and-white photos, aircraft specifications and production records, 3-view drawings of the RNF, UBF, YPT-14, and UPF-7, as well as a brief description of each model in the F series. A special feature is 15 full-page photos of restored Wacos, all of which are excellent modeling subjects.

The book is sold for \$12.95 by Historic Aviation, 3850 Coronation Road, Eagan, MN 55122.

FLAGS

For ship modellers and marine artists

Alec A. Purves



Flags for Ship Modellers and Marine Artists

First published in 1950, this 84-page, 4½" x 7¼", soft-cover book has been reissued by Conway Maritime Press, 24 Bride Lane, Fleet Street, London, EC47 8DR, England; the price is £3.50. It contains text and 104 black-and-white line drawings showing the flags used on English vessels since about 1300, on the ships of other major European maritime powers since about 1700, and on U. S. vessels since 1776. The bibliography indicates that *National Geographic* has published a number of articles on U. S. and other flags over the years — these should be easy to locate since many public libraries have a complete collection of the magazine.

Modern Combat Aircraft and Insignia

Originally published in England in 1978 with the title *Combat Aircraft*, this soft-cover, 4½" x 7½", 130-page book contains photos, paintings, and brief descriptions of 65 military aircraft now in service. There

APC HOBBIES 11A FENCE RD EARLYSVILLE, VA. 22936



mail order
catalog \$1.00

M C/VISA
PHONE 804-9732705

TAMIYA 1/48	\$7.50
6427 A6M5 Zero	
TAMIYA 1/35	\$6.00
MM225 Mutt w/tow	
HASEGAWA 1/72	\$4.15
DOLB F1 Mirage	
C004 OVIA Mohawk	
TANK ILLUSTRATED	\$6.00ea
#1 Allied Forces of Eur. (Mod.)	
#2 The Battle of Bulge	
WAR BIRD ILLUSTRATED	
#13 Military Helicopters	\$6.00
#14 Air War Viet Nam, Pt. 2	\$6.00
#15 Amer. A/C WWII &	
Korea (color)	\$7.50
#16 Amer. A/C WWII &	
Korea (color), Pt. 2	\$7.50
BANDAI 1/72	
8508 YS-11	\$9.00

Hasegawa 1/48 Scale

P006 F4C9 PHANTOM II \$15.75

POSTAGE 1.50 per order

Hobbyists!
Craftsmen!
Buy Direct from
MICRO-MARK AND SAVE

MINIATURE TOOLS NOW ON SALE!

(Order early — Sale ends 1/1/84)

Factory Fresh, brand name merchandise shipped directly to
your door — AT SAVINGS UP TO 40%!

SPECIAL "LET'S GET ACQUAINTED"
OFFER! If you use miniature tools, you'll
find outstanding values like these in our
new MICRO-MARK catalog! Over 400
tools and accessories — many hard to
find! Save time, save money, shop one-
stop MICRO-MARK!

Mail NO-RISK coupon TODAY!



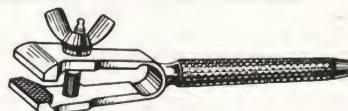
MICROFLAME BRAZING
AND SOLDERING KIT
With deluxe accessories
Item #17101AE

Regular Price: \$29.95
MICRO-MARK SALE PRICE: \$19.95
(plus \$2.00 insured delivery: TOTAL = \$21.95)



DREMEL DELUXE VARIABLE
SPEED MOTO-TOOL KIT
With 40 accessories
Item #38271 AE

Regular Price: \$94.95
MICRO-MARK SALE PRICE: \$59.95
(plus \$4.00 insured delivery: TOTAL = \$63.95)



JEWELER'S HAND VISE
Made of polished steel
Item #21102 AE

Regular Price: \$11.95
MICRO-MARK SALE PRICE: \$6.95
(plus 70¢ insured delivery: TOTAL = \$7.65)



CARBON STEEL
DRILL BIT SET
With 20 micro-sized drill bits
Item #26110 AE

Regular Price: \$19.95
MICRO-MARK SALE PRICE: \$14.95
(plus \$1.50 insured delivery: TOTAL = \$16.45)

FREE BONUS!
Our big,
new
MICRO-MARK
Miniature Tools
Catalog with
each order!



SAVE TIME! ORDER TOLL-FREE
1-800-225-1066

with credit card 24 hours, 7 days a week! (in NJ, call 201-464-6764)

RUSH ORDER COUPON

MICRO-MARK • Box 5112 AE • 24 East Main Street • Clinton NY 10809

YES, please send me the items indicated below:

Qty.	Item #	Price Ea.	Total

Send me your big new MICRO-MARK TOOL CATALOG absolutely free with my order.

I'm not ordering now — send me your TOOL CATALOG for \$1 postpaid.

NJ residents add appropriate sales tax.

NO-RISK CUSTOMER GUARANTEE: You must be 100% delighted or return your order within 14 days for a full refund of the purchase price.

Total enclosed \$ _____ in check or money order
payable to MICRO-MARK. (Sorry, no CODs).

Charge it: Master Card Visa

Acct. #: _____ Exp. _____

Signature _____

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

© MICRO-MARK, 1983

THE Spare Time SHOP

We Have All This... 

- ARMOR
- AIRCRAFT
- AUTOMOBILES
- SHIPS
- ROCKETRY
- SPACE
- SCI FI
- WARGAMING
- MINIATURES

ALL SCALES • ALL MAKES

DOMESTIC AND IMPORTED

THERE ARE OVER 3,500 PLASTIC MODELS ON THE MARKET TODAY
WE HAVE EVERY ONE THAT IS NOW AVAILABLE SEE FOR YOURSELF!
DROP BY

\$3.00

for our new catalog
Call (617) 481-5786



The Spare Time Shop
222 E Main St. Marlboro MA 01752



Space Shuttle, America's Wings to the Future, Second Edition

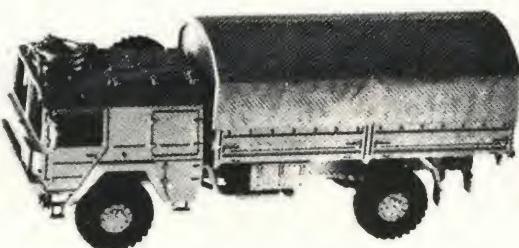
Written by Marshall H. Kaplan, president of an engineering consulting firm that has had many contracts with NASA, this 216-page, 7½" x 11", hard-cover book contains text; 108 black-and-white photos; 103 drawings, maps, and charts; and 8 pages of color illustrations and photos. There are scale drawings of the Space Shuttle as well as color schemes and markings.



are 88 photos (71 in color) and 71 color paintings showing aircraft in flight.

The book's most interesting feature, however, is a section that shows in color the national insignia used by the air forces of 96 countries.

The book is published by Arco Publishing, Inc.; the price is \$6.95.



A. Kempees

ROCO Minitanks are an extensive assortment of HO scale military miniatures suitable for use in dioramas.

They are molded in polystyrene plastic and feature many of the details of the much larger scales.

Choose from a selection of over 200 military vehicles!

"The Unofficial Importer"
All 1:87 Perfect HO scale

A. Kempees

SEND \$1.00 FOR A
COMPLETE CATALOG
AND PRICE LIST

A. Kempees
Hensyn Village Q-4A
Budd Lake, NJ 07828

A. Kempees

DO YOU WANT TO LEARN MORE ABOUT MODELING?
IPMS - USA OFFERS YOU...



Membership in a non-profit organization founded "BY MODELERS FOR MODELERS".

Membership includes 4 Quarters and 6 Updates per membership year. They contain articles on camouflage and marking, super-detailing, model conversions, scratch building, historical information, and much more.

Yes! Enroll me now in IPMS/USA.

I enclose \$ _____ for 1-year membership in IPMS/USA. I understand this membership includes subscription to four IPMS/USA

Quarters and six Updates.

Name _____

Address _____

City _____ State _____ Zip _____

Country _____

Type of Membership:

Adult \$18.00 Foreign \$21.00 Junior \$10.00 Birthdate _____
(17 years and under)

For Samples, send \$2.75.

Make check or money order payable to IPMS/USA
(Please don't send cash!)



Mail to:
IPMS/USA
New Membership
P. O. Box 480, FSM
Denver, Colorado
80201

Balloon Bomb Attacks on North America
Japan's World War II Assaults



フ号

Robert C. Mikesh

Balloon Bomb Attacks on North America

Between November 1944 and April 1945, the Japanese launched more than 9,000 paper balloons into the jet stream which carried them as far as Michigan. Armed with incendiary or antipersonnel bombs, the balloons were supposed to start fires in western forests and terrorize the American population. In fact, the bombs caused little damage and the only known fatalities were a woman and five children who were killed by a balloon bomb in Lake County, Oregon, on May 5, 1945. Nevertheless, the balloon bomb was a potentially serious threat.

Originally published by the Smithsonian Institution Press in 1973 and now republished by Aero Publishers, Inc., Robert C. Mikesh's 7¼" x 10½", 86-page, soft-cover volume (\$8.95) contains 79 black-and-white photos, 23 drawings and maps, a bibliography, and a chronology of balloon bomb incidents. The text, based on research in the U. S. and Japan, describes the history of the balloon bomb campaign, the construction and armament of the balloons, and launching methods.

More Book Briefs on page 68



Assemble an Arsenal of Ancient Artillery...

and discover a fascinating new hobby!

Build them out of brass and wood!

Made exclusively to our quality standards, these European kits are like nothing you'll find in stores. Cannon barrels are machine-turned brass, except for the French 12 pounder, whose sculptured ornamentation required casting the barrel in gilded metal. All other metal parts are made of precision-finished solid brass. Wooden parts are walnut and mahogany. And you won't find any plastic, anywhere! When completed, you'll have a magnificent collection of authentically scaled cannon miniatures you can display with pride in your home or office.

It's a lot easier than you think!

Our kits are designed for the first time modeler, and take only a few relaxing hours to put together. Each contains about 40 parts, not counting the cannon balls and brass nails, but we've done all the hard work for you! All wooden parts are accurately pre-cut and need only light sanding and varnish. Metal parts need no work at all—they're ready to assemble. Clear, concise plans and easy-to-follow instructions are included to make sure you finish what you start!

The Cannons are only the beginning!

You'd expect to pay a lot more for cannon kits of this quality. But they can be yours for just \$11.95 per kit, or \$59.95 for the entire collection. But the cannons are only the beginning...

...We promised you a fascinating new hobby and we intend to deliver! With your order, you'll also receive our 48-page color catalog illustrating many more cannon kits you can build. Plus dozens of museum quality wooden ship models up to 52" long, ranging in price from \$39

to \$799. Order now, and experience the excitement of historic cannon modeling!

Get this Free Bonus when you order two or more Kits.

Everything you need to assemble and finish your cannons is included in this Free Bonus Tool Package. You'll get a hobby knife, a small hammer, tweezers, glue, sandpaper, varnish, and a brush to apply it with. If bought separately in a store you'd easily spend \$9.00 or more for these tools and materials. But they're yours, free if you order two or more kits now!



Unconditionally Guaranteed

If less than delighted, return within 30 days for full refund.

Use the handy coupon below. Or, for fastest service, credit card holders can call TOLL-FREE

800-526-2598

(In New Jersey, call 201-575-6253)

model expo, inc. 23 Just Road, Fairfield, New Jersey 07007

Dept. FSM-838

model expo, inc. 23 Just Road, Fairfield, N.J. 07007

- My check or money order is enclosed.
 Charge my credit card
 MasterCard Visa American Express

Card No. _____

Exp. Date _____

Signature _____

Name _____

Address _____

City _____

State _____

Zip _____



Check here if ordering 2 or more kits.
We'll include Free Bonus Tools with your order.

SAVE \$11.75! Check here to receive all 6 cannons and free bonus tool package @ \$59.95, plus \$6 shipping.

22 easy ways to build museum-quality wood ship models.

The famous ship model fleet from Scientific is designed to make assembly easy. All feature pre-carved, solid hardwood hulls eliminating the need for tedious and difficult plank on frame construction. All kits also feature hardwood decking, masts and yards, precision cast metal

fittings, rigging cordage, antique cloth sails, wood display stand and pedestals, and easy-to-follow, step-by-step instructions.

SEND FOR FREE
FULL COLOR CATALOG

Kits priced from \$12.95

SCIENTIFIC MODELS INC.

340BX Snyder Avenue, Berkeley Heights, N.J. 07922

SCIENTIFIC

Quality Hobby Crafts Since 1928



Kit 165, Sovereign of the
Seas Clipper, 24"

Kit 166, USS Kearsarge
Gunboat, 27"



Kit 163, Cutty Sark
Clipper, 24"



Kit 164, Bluenose
Schooner, 24"



Kit 167, Flying Cloud
Clipper, 14"



Kit 168, Eagle, USCG
Ship, 13"



Kit 169, HMS Bounty, 14"



Kit 170, USS
Constitution, 15".



Kit 171, Sea Witch
Clipper, 28"



Kit 172, Baltimore Clipper
Pirate Brig, 23"



Kit 174, Cutty Sark
Clipper, 15"



Kit 177, Golden Hind, 20"



Kit 178, America
Schooner Yacht, 17"



Kit 181, Robert E Lee
Steamboat, 25"



Kit 182, Thermopylae
Clipper, 31"



Kit 183, Charles W
Morgan Whaler, 18".



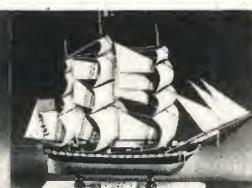
Kit 184 Spanish Galleon, 20"



Kit 185, Man O War, 17"



Kit 302, Atlantic
Schooner Yacht, 13 1/2"



Kit 187, USS
Constitution, 12"



Kit 300, USS
Constitution, 28"



Kit 301, Santa Maria
Flagship, 20"

HOW TO BUILD PLASTIC SHIP MODELS

In this book you'll discover how to build historically accurate ship models from plastic kits. Author Les Wilkins provides 64 pages that will guide you as you model sailing and steel ships. Step-by-step instructions for building the U. S. S. *President* are also included. With this book, beginners will achieve good results from the start and veteran modelbuilders will learn new modeling techniques! \$6.25



**HOW TO BUILD
Plastic Ship Models**



FAMOUS SPACESHIPS OF FACT AND FANTASY

Here's a source of data about the famous spacecraft of history and lore! In 88 pages, you'll find drawings and photos (many in color) of spacecraft such as the Saturn V moon rocket, Apollo Command and Service modules, Lunar Module, Space Shuttle Orbiter, Orion III, Star Trek's U. S. S. *Enterprise*, and Star Wars' X-wing fighter. And you'll discover step-by-step instructions on how to model each spacecraft! \$8.50



**FAMOUS
SPACESHIPS
OF FACT AND FANTASY**

MODELING TANKS AND MILITARY VEHICLES

In 76 pages, Shepherd Paine shows you how to build accurate, realistic armor models that you'll be proud of. Paine covers basic modeling techniques such as kit assembly and painting, then progresses to kit conversions, weathering, detailing, and even scratchbuilding. Step-by-step instructions for constructing an Opel Maultier, Horch 4 x 4, Super Sherman, and M25 tank transporter are included! \$8.95



**Modeling TANKS
and MILITARY
VEHICLES**



DEPT. 5154
KALMBACH BOOKS
1027 N. SEVENTH ST.
MILWAUKEE, WI 53233

Please send me the books I've marked.

- My check is enclosed
 This is a credit card purchase

If you don't wish to clip your magazine, copy the necessary information including department number on a separate sheet. Prices subject to change. © KALMBACH PUBLISHING CO.

NAME _____

STREET _____

CITY _____

STATE, ZIP _____

CHARGE TO MASTERCARD VISA EXP DATE _____

CARD NUMBER _____

SIGNATURE _____

QUANTITY TITLE PRICE

—	BUILDING PLASTIC MODELS	\$4.75
—	FAMOUS SPACESHIPS OF FACT AND FANTASY	\$8.50
—	HINTS AND TIPS FOR PLASTIC MODELING	\$3.95
—	HOW TO BUILD DIORAMAS	\$8.95
—	HOW TO BUILD PLASTIC SHIP MODELS	\$6.25
—	MODELING TANKS AND MILITARY VEHICLES	\$8.95
—	WORLD WAR TWO JET FIGHTERS	\$8.50

SUBTOTAL

Postage and handling, U. S. \$.75 foreign \$ 1.25 (per order) Wisconsin residents add 5 per cent sales tax

TOTAL

INTRICATE SCALE MODELS in 1:8 and 1:87

For the ultimate challenge—and satisfaction—try a Pocher car kit! Made up of between 823 and 2,905 beautiful parts, these kits are exact duplicates, in miniature, of the real automobile. Try your skill on one of these incredible kits.

1/8 Scale



\$398.00

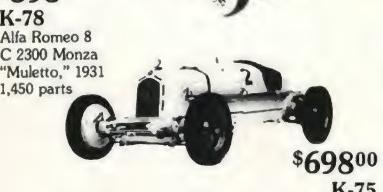
K-78

Alfa Romeo 8
C 2300 Monza
"Muleto," 1931
1,450 parts

\$598.00

K-74

Mercedes Benz
500 K/AK
Cabriolet, 1935
2,378 parts



\$698.00

K-75

Torpedo Phantom II
Convertible, 1934
2,905 parts



CATALOG, \$2.00, Double Refundable with order

You can't beat the realism you can achieve when you use Roco Minitanks in your military scene. Modeled in HO scale, they are complete and ready to use as is, or if you wish, simply add some weathering to add more realism. Choose from WWI to modern equipment.

HO Scale

\$1.99

227

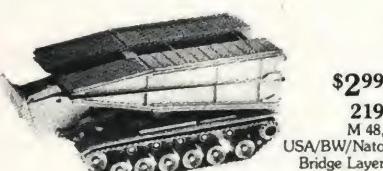
8 Ton
Zugmaschine,
Krauss-Maffei
KM 11, EDW



\$2.99

219

M 48,
USA/BW/Nato
Bridge Layer



\$2.25

190

Faun 508/54 VA,
10 Ton Truck



CATALOG, \$2.00, Refundable with order

Ordering Instructions: TRY YOUR FAVORITE HOBBY SHOP FIRST. If not available in your area, order direct from I.H.C. Send certified check or money order. MasterCard or Visa (supply card no., exp. date and signature) for prompt service. Personal check, allow two weeks for clearance. Prompt full refund on out-of-stock items. Add 2.50 for postage & handling on orders under \$20.00. Pa. residents add 6% sales tax. Dealer inquiries invited. New products introduced each month.

**International
Hobby
Corp.**

350 E. Tioga St.
Phila., PA 19134
(215) 426-2873

A-20 Havoc

in action



Aircraft Number 58

A-20 Havoc in Action

The A-20 Havoc (or "Boston" to the British) was used in Europe from the time of the German invasion of France through the German surrender, primarily as a low- or medium-level light bomber. It was used in the Pacific as a low-level bombing and strafing plane, especially against shipping and airfields. The author states that 3,125 of the total of 7,385 A-20s built went to Russia, but little is known of their deployment.

This 50-page, soft-cover, horizontal-format, 8 1/4" x 11" book by Jim Mesko contains 100 black-and-white photos, 13 paintings by Don Greer, 3-view drawings of the A-20C and A-20G, and many drawings of aircraft details. The text describes the Douglas Model 7B of 1938, and the DB-7, DB-7A, DB-7B, A-20A, A-20B, A-20G, A-20J, and P-70. It is published by Squadron/Signal Publications; the price is \$4.95.

Air Force Combat Units of World War II

Originally published by the USAF Historical Division in 1961 and reprinted in 1980 by Zenger Publishing Co., Inc., P.O. Box 42026, Washington, DC 20015, this 506-page, 6 1/4" x 9 1/2", hard-cover book edited by Maurer Maurer contains brief histories of the groups, wings, divisions, commands, and air forces active during WWII. There is a chronology of each unit's history, stations, commanders, campaigns, decorations, emblem (if any), and squadrons attached (for groups) or groups attached (for wings). A black-and-white illustration and a full heraldic description explain each emblem. Indexes and glossaries make the book easy to use. The price is \$21.95.

COMBAT SQUADRONS OF THE AIR FORCE

IN
WORLD WAR II

HISTORY and INSIGNIA

Edited by Maurer Maurer



Combat Squadrons of the Air Force in World War II, History and Insignia

Edited by Maurer Maurer and published by the USAF Historical Division in 1969 to complement the volume described above, this hard-cover, 842-page, 6 1/4" x 9 1/2" book describes 1,226 combat squadrons active in WWII. Each squadron's lineage, assignments, stations, aircraft, operations, service streamers, campaigns, decorations, and emblem (if any) are described. There is an index. The book is now published by Zenger Publishing Co., Inc.; the price is \$29.95.

FSM



Cobra in the Clouds

The title of John Stanaway's book refers to the squadron insignia of the 39th Fighter Squadron, which was reportedly designed by Walt Disney Studios while the squadron was operating with P-39 Airacobras. This book is a combat history of the 39th from its activation as the 39th Pursuit Squadron at Selfridge Field, Michigan, on February 1, 1940. After stateside training the squadron began its first tour of duty with the 35th Fighter Group at Port Moresby, New Guinea, on June 2, 1942. Thereafter, it fought in New Guinea and the Philippines until the Japanese surrender, when it became part of the occupation forces. The squadron then fought throughout the Korean War, returned to Japan, and was deactivated on December 8, 1957. It has been reactivated several times since, most recently on July 1, 1977, and as of 1980 was flying F-4Es. Most of the text and photos concentrate on the squadron's combat in World War Two and Korea—the text includes numerous combat reports by individual pilots.

The 48-page, 8 1/2" x 11", soft-cover book contains 83 black-and-white photos as well as lists of aces assigned to the squadron (14 in WWII, including Tommy Lynch with 16 victories with the 39th), squadron commanders, and aircraft types used by its pilots. It is published by Historical Aviation Album, P.O. Box 33, Temple City, CA 91780; the price is \$6.50 plus \$1.00 postage.

CUSH

FACT, FICTION & FANTASY
MAIL ORDER

MINIATURE FIGURES

(Connoisseur)

CHOTA SAHIB

KL/1 U.S.
Special Forces Vietnam,
1968-70

FL/4. Capt. 1 er Rep (1st
Foreign Leg. Para. Regt.)
Algeria, 1959

\$6.50 Each

Plus \$1.25
Postage, Per Order
54mm Scale

Send \$4 For Illustrated Catalog
Over 100 Pages & Periodic Updates

Now Stocking
Most
Major Brands

CUSH
6525 W. Bluemound
Milwaukee, WI 53213
(414) 258-6006

Would you like to share information on a useful tool or technique with other FSM readers? Send a brief description of the tool or technique and a black-and-white photo or a pencil sketch to FSM Tips, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233. Please enclose a stamped, self-addressed envelope for return of photos. Tips are paid for upon publication.



Sticky clay. How often have you wished for three, four, or five hands? Or wished you had a better tool than that super catapult, the tweezer, for picking up and holding small parts? The perfect answer is a British product called Bostik Blu-Tack. It is marketed in the U.S. by USM Corp., Bostik Division, Boston House, Middleton, MA 01949. It looks like modeling clay but acts as a clean working glue. I use it to hold parts together for checking when doing conversions. I also put a slab of it under my bottle of liquid glue so I won't knock it over. I roll it into a thin sausage to pick up small parts, and to attach figures to my painting stand.

Dick Hirdes

Get down low. Models are most interesting when photographed at simulated eye level, so wind down your tripod until the center of the lens is five or six scale feet above whatever surface the model is resting upon.

Burr Angle, photo by Paul Boyer

Clip-on sanding discs. The Merit clip-on sanding attachment has become the most valuable single tool I own. Although the discs come in a variety of sizes, I find that the 1½"-diameter disc is best suited for hobby work. The ¼" shank fits a standard Dremel tool. Its greatest feature is that the sanding discs snap on and off easily, allow-

Which is the only modeling magazine in the world to give its readers a free decal sheet?

Yes, Scale Aircraft Modelling provides its readers with a superb aircraft decal sheet every other issue linked with one of the lead articles. Apart from that it has the best camouflage and markings drawings, detailed histories and plenty of how-to-do-it information and up-to-date reviews of the latest kits, decals and accessories. It's a must for all aircraft modelers. Check your local store or take out an annual subscription, now!

SCALE AIRCRAFT MODELLING
226 HIGH STREET,
BERKHAMSTED, HERTS,
HP4 1AD, ENGLAND

or from Bill Dean Books Ltd., 166-41
Powells Cove Boulevard, Whitestone,
New York 11357

CACTUS AIRFORCE imports
Plastic Model kits from Mexico.
Send SSAE for Catalog price list.
CACTUS AIRFORCE
P.O. Box 761, College Station, TX 77841

Styrene... Fast, Accurate, Versatile

Use precut styrene strips and
sheets on your next project.

evergreen
scale models

Send SSAE to Dept. 136 for info

1414-127th Pl. N.E., Suite 107
Bellevue, Washington 98005

VP	1	1/2	vacuforms	REST	QUALITY!
CANADA					
R-5 1928 Russian bomber biplane	NTN	\$6.95			
DFS 194 Pre-Me163 rocket research aircraft	NEW	5.95			
Beriev Be-2 (KOR-1) 1937 Russian seaplane		6.95			
Blohm & Voss BV-40 WW2 glider fighter		3.95			
Bereznayl-Isaev BI WW2 Russian rocket fighter		3.95			
Avis BH-1 1925 Czech biplane fighter		5.95			
Avis B-624 1936 Czech biplane fighter		5.95			
Lavochkin LaGG-3 WW2 Russian fighter		5.95			
Me163A rocket research fighter-NOT Me163B Komet		5.95			
Avis BH-3 1922 Czech monoplane fighter		5.25			

Send for newsletter. DEALER INQUIRIES INVITED.
Payment in US dollars. POSTFREE.
VICTORIA PROMOTICS, DEPT. F, 930 Foul Bay Road
Victoria, B.C., Canada, V8S 4H8



Mitchell's flexible cords and tapes are impregnated with aluminum oxide or silicon carbide abrasives. They can be used on metal, plastic, or wood to deburr, grind, polish, and finish those hard-to-reach holes, slots, grooves and curved surfaces.

INTRODUCTORY SPECIAL

3 sample spools of aluminum oxide tapes and cords. Approximately 25 feet each.
*52 (round) *53 (round) *56 (flat)

SEND TODAY — Only \$12.00
(plus \$1.50 postage & handling)

DISPLAY CARD
with 13 samples \$1.00
Free with Order

E.C. MITCHELL CO. INC.
P.O. Drawer 607, Dept. FM93
Middleton, MA 01949-0907



ing you to switch from coarse to medium or fine grit in seconds. The small size gets it into spots larger discs can't, and there is no center mounting screw to get in the way of the work. I've used it with great success on all materials — white metal, brass, epoxy, wood, and plastic. The coarse grit is excellent for removing lots of material quickly; it's the only hand tool I've found that is powerful enough to do this job well on metal figures. An adjustable speed control of some sort is helpful, particularly when working with plastic which tends to melt at high speeds.

Shep Paine



Miniature sander. A small sanding block can be made from a rubber eraser found in school bookstores. Simply cut a slot at each end, insert a strip of sandpaper, and anchor it with thumbtacks. The rubber eraser is firm yet resilient, just right for delicate sanding jobs.

Ed Kolbush



Plastic wool. 3M's Home 'n Hobby Pad is a plastic substitute for steel wool and comes in fine, medium, and coarse grades. It's great for rubbing down primer or removing minor imperfections in finish coats. Its fibrous structure does not load up and can be rinsed clean. Look for it at hardware stores, art supply stores, and supermarkets.

Ed Kolbush

Mail Order Only



**SCRATCH-BUILDING
SUPER-DETAILING
SUPPLIES &
ACCESSORIES
WEATHERING & DIORAMA
MATERIAL
FEATURING**

Nuts, Bolts & Fittings



Ropes, Chains & Cables



Styrene Sheet, Rod & Strip



Basswood, Balsa, Plywoods



Camouflage Nettings



Screening



Terrain



Spare Parts



★ARMOR★SHIPS★

★AIRCRAFT★RAILROAD★

★FIGURES★VEHICLES★

We ship anywhere in the world

New Catalog ★ \$2.00

**METROPOLITAN MODEL
SUPPLY COMPANY**

24-16 Steinway Street
Astoria, NY 11103 Suite 583



Hours: Mon-Sat 10-9, Sun and Holidays 11-6

**SPECIALIZING IN
PLASTIC KITS**

- Aircraft
- Armor
- Automobile
- Ships

TOOLS

- Unimat
- X-acto
- Dremel
- Paasche

GAMES

- Software
- D&D
- Strategy
- RPG

BOOKS

- Aircraft
- Ships
- Automobile
- Armor

**ALL MAJOR MODELS AND
MAGAZINES—BOTH FOREIGN
AND DOMESTIC**

- MICROSCALE, SCALE
MASTER, ATP, FOWLER, ETC. DECALS
- POLLY S, FLOQUIL, HUMBROL,
PACTRA, TESTORS, TAMPIA, PAINTS
- HO TRAINS AND ACCESSORIES

Wood grain effect. A polished wood propeller on a small scale biplane looks great, and it's not difficult to do. Paint the propeller with the shade of brown that comes closest to the wood color you want to simulate. Next, using an old, worn fine-tip brush, lightly streak a darker brown color from a fresh bottle of paint. Use light, swirling strokes for the best effect. Keep the bristles of the brush spread out and the paint fresh at the tips of the bristles. Use photos of real wooden propellers for reference.

David Longe

Laminate sheet plastic to rough shape.



File and sand to final shape.

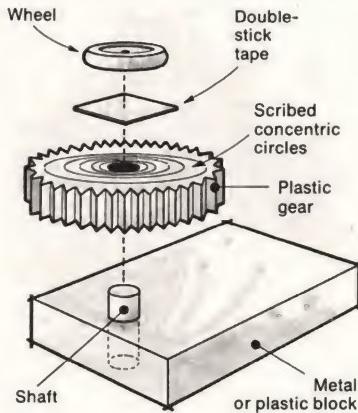


Finished air scoop



Plastic laminate. I have had great success fabricating parts by using laminated sheet plastic bonded with liquid cement. First, I laminate the plastic to the rough shape I need, let the assembly dry for 24 hours, then file and sand to come up with the final shape. I have made cooling scoops, nose cones, and pylons with this method, but just about anything can be produced this way.

Novus H. Henry, Jr.



Miniature turntable. Here is a gadget that makes it easy to paint wheels and tires. Purchase a plastic gear from a radio and television parts supply store and slip it on to an axle mounted on a block made from metal or plastic. With a circle template, scribe concentric circles on the top of the gear to ease centering of the wheel. Attach the wheel to the gear with double-stick tape. Turn the gear with your finger as you hold the paintbrush on the wheel. Allow the wheel to dry thoroughly before painting the other side.

Ed Kolbush

D & J HOBBY

Located in

San Francisco-San Jose area

D & J Hobby & Crafts
96 San Tomas Aquino Road
Campbell, CA 95008
Ph. (408) 379-1696



COME IN AND VISIT OUR NEW LARGER STORE

WE CARRY
COMPLETE
LINES OF:

We have no
catalog, but we
do sell mail
order. Send SSAE
for your specific
inquiries.

- ★ Imported Aircraft, Ships and Armor Kits
- ★ Fantasy Miniatures & Games
- ★ Minitanks & GHQ Micro Armor
- ★ Humbrol—Polly S—Floquil
- ★ Paasche Airbrushes & Parts
- ★ Scratchbuilding Supplies
- ★ Wargames and Miniatures
- ★ Decals, Magazines and Books

Open: Mon-Thurs-Fri 10:30-9

Tues-Wed 10:30-6

Sat 10:5-30 Sun 12:5-30



M 102 STONE FARMHOUSE BOMBED OUT

CAST IN PLASTER IN 8 SECTIONS
INCLUDES EXTRA RUBBLE MATERIAL
APPROXIMATELY 8 X 8"
ADD 2.00 P/H TEXAS RESIDENTS ADD SALES TAX



14.95

AMERICA'S OLDEST MODEL MAKERS

Models of Achievement

Since 1905, our scale model wooden ship kits have been the favorites of discriminating model builders. Only the finest materials are used. Our precision fittings are cast only in high quality britannia metal or machined of brass—no lead or plastic.

Our kits contain everything needed to make a handsome model, worthy of the time and



U.S.S. CHICAGO

1/16" = 1' Scale

care put into building them.

Send \$2 for catalog of kits, fittings, and supplies.

BLUEJACKET SHIP CRAFTERS
P.O. Box 533-FSM, Shelton, CT 06484



1/72 C-97 BOEING STRATOFREIGHTER
\$22.95 plus \$2.50 postage.

VACUFORMS



For catalog sheets, send SSAE.

WHITE EAGLE
VACU-FORM CO.

P.O. Box 1834
Dearborn, MI 48121

CLASSIFIED ADVERTISEMENTS

PLEASE FURNISH STREET ADDRESS FOR FSM'S PRIVATE RECORDS WHEN USING A P.O. BOX NUMBER IN YOUR AD

This section is open to anyone who wants to sell or buy scale modeling merchandise.

RATE: 20¢ per word. MINIMUM charge is \$2.40. Count ALL initials, single numbers, groups of numbers (i.e., AFV or B-24), name, address number, street number, city, state, phone numbers each as one word. Zip code is free. Payment should be made in advance.

CLOSING DATE: Fall issue closes July 15.

FOR SALE

Brookhurst Hobbies, 12741 Brookhurst Way, Garden Grove, CA 92640 has military kits from around the world! Plastic armor, aircraft, wargames, books, paints, tools. Mail orders sent anywhere. Catalog, \$2.50.

We have the latest plastic military and automobile kit releases in stock. Mail order is a specialty with us. Also books, decals, paints, magazines, and more. Write or call. Ted's Engine House, 6307 Westfield, Pennsauken, NJ 08110. (609) 662-0222.

Complete line of historical miniature figures. All your special needs. Plastic, metal, and wood; sheets, strips, and shapes. Fiber optics, electronics, and all types of lighting. Complete diorama supplies—all scales. Catalog sheets, \$1.50. Train Exchange, 71 Hilliard St., Manchester, CT 06040.

Imported books from Germany: Aviation and military subjects. From Motorbuch, Podzun, Alba, Mittler, Pawlis publishers. Seelen Waffen Arsenal, Bildreport World War Two, Foto Archives, 50¢ in stamp for list. Dealer inquiries invited. Periodical Exchange Germany, P.O. Box 121, Hopkins, MN 55343.

Airliner model kits (various scales; domestic, imported, hard-to-find), decals, photographs, publications, lithographs—large selection! Many exclusive items available. Mail orders our specialty, quick delivery everywhere in the U.S. and around the world. Send \$1 for latest catalog. Jet Set System USA, 549-G Rambla, Ponce, PR 00731.

Plan enlarging service: Color photo packs,

Winter issue closes October 15. Spring issue closes January 15, and Summer issue closes April 15. We do not furnish box numbers.

ALL COPY: is set in standard 6-point type. First several words only set in bold face. If possible ads should be sent typewritten to insure accuracy.

Send your ads to FineScale Modeler, 1027 N. 7th St., Milwaukee, WI 53233.

three-view drawings for 500 aircraft. Plans for giant, standoff, and fun fly. Catalog, \$2; \$4 overseas. Scale Plans and Photo Service, 3209 Madison Ave., Greensboro, NC 27403. Phone (919) 292-5239.

Andy's Place: Mail order, quick delivery in the U.S. and around the world. All tools and supplies, complete stock of airline and military decals. "If we don't carry it, you probably don't need it." \$1.50 gets you our 50-page catalog. 20090 Champ Dr., Euclid, OH 44117. (216) 383-9104.

Catalog, \$1. "Aviation Art in Miniature" series. Catalog 4170, Jackson, MS 39216. (601) 353-9239.

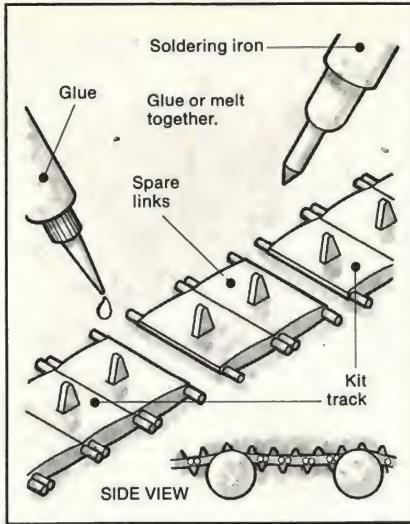
Discover the exciting world of paper models. Featuring realistic, full-color scale replicas of aircraft, ships, cars, famous buildings, birds, and more. Easy to build. Get started today. Illustrated catalog, \$1. Starline, Box 322, Stanton, CA 90680.

Model magazines: Aero Modeller, Air Trails, Airfix, American Modeller, Flying Aces, Flying Models, Model Airplane News, Profiles, Scale Aircraft Modeller, Scale Modeller, Scale Models plus Air Classics, Wings, Airpower, etc. SSAE for price list. Aero Literature, Box 1441, Olympia, WA 98507.

Rare kits: From and of science fiction, comics, TV, movies, space, missiles, figures, and other unusual kits. Old, new, Japanese, etc. Hundreds available. Buying and selling! Send SSAE for list. John Green, 1872 W. Carol Dr., Fullerton, CA 92633.

Airliner model kits, decals, related items.

Large selection from all over the world. Low



Realistic tank tracks. Tank tracks look more realistic when they drape over the wheels. If your tank kit has extra track, attach it to the end of the main track piece with glue or with a soldering iron. The longer track will allow extra slack and the track will sag between each wheel.

Melvin Mays



Artist's blending stumps. Weathering with Rub 'n Buff or pastels is easier to apply if you use an artist's blending stump. These are available at most artist's supply houses.

Dick Hirdes

**1/72nd BD-5 J WITH DECALS
CLEARANCE!
ONLY 200 LEFT! \$2. p. pd.
299 MODELS**
14515-6th Ave. NE, Seattle, WA 98155

When writing to advertisers,
please mention you saw
their advertisement in
FINE SCALE MODELER

prices, compare and see! Mail order worldwide. \$1 for latest catalog. You get more for your money at Starline. Starline Discount Hobbies, Box 38, Stanton, CA 90680. Buy American.

Gate 66, the airline modeler's newsletter, published bi-monthly since 1974, covers all aspects of airliner modeling. Well-illustrated, model kit news and reviews, how-to's, reader photos, and ads. Subscribe to the original Gate 66, \$9.50 per year in North America, \$18 per year worldwide. Checks payable to Starline, Gate 66, Box 660, Stanton, CA 90680. Sample copy \$1.75.

Kit Collectors International, the club for model kit collectors, with our bi-monthly journal *Vintage Plastic* featuring articles and news for kit collectors and loads of reader ads. Over 500 members worldwide. Many benefits for members. SSAE gets full information. Membership, \$12 per year in U.S. and Canada, \$18 per year worldwide. Kit Collectors International, Box 38, Stanton, CA 90680.

Original Spitfire artwork: Airbrushed renderings done 1/24 scale. Eleven views on seven panels suitable for framing. Same art as seen in Winter 1982 FSM. \$49.75. Ken Sommerfeld, Box 12 Hillview Park, Princeton, IL 61356.

Recon Hobbies: Big discounts on armor, aircraft, ships, cars, games, hobby supplies, plus collector's corner. Send \$1 for catalog to P.O. Box 123, Manhattan, NY 10030-0123.

For sale: Send SSAE and one loose stamp for two-page list of wargames, modeling magazines, and armor-related books. Tom Dinackus, Lansing West Apartments, Apt. N3C, 2250 North Triphammer Rd., Ithaca, NY 14850.

Free catalog. Military miniatures specializing in 25mm Napoleons. Large selection, all scales. GHQ, Tradition, much more. The Model Shoppe, 323½ Richmond St., El Segundo, CA 90245.

One of the largest suppliers of vacu-forms in the U.S. Twenty-seven brands, plus metal props, guns, engines. Latest resin kits. Listings; \$1; huge variety of injection kits, imported books, supplies, etc. Newsletters \$2.50 per year. Raribirds, 113 Midland Ave., Kearny, NJ 07032. (201) 991-3689.

Discount Hobby Center, 405 James St., Utica, NY 13501. Phone (315) 733-3741. Imported and domestic plastic models. Hasegawa 1/48 F-4J, F-4BN, F-4C/D Phantoms \$14.50 each. 1/72 Mirage F-1C \$4.12.

Minicraft/Hasegawa 1/72 F-15C Eagle \$4.50. Monogram 1/48 F-106A, F-105F, A-18, F-105G, F-14A, F-15, F-4J, and F-4C \$4.99 each. 1/72 B-1B bomber \$8.95. Revell 1/144 KC-10 tanker w/F-15 \$6.95. 1/32 F-15E, and F-14 \$16.19 each, 1/48 B-1B bomber \$22.50. (B-1B in 1/48 scale should be in by the time you're reading this ad). Italeri 1/72 F-5F (two seat F-5) \$4.25. Takara 1/100 MiG-27, Yak-36, A-4M, F-5G (F-20), F-100, F-8, Kfir and Harrier \$4.79 each. F-14 \$5.79. (A-10 \$5.79, should be in stock by the time you're reading this ad). Matchbox, Lightning T-55 1/72 scale \$4.50. (Matchbox 1/72 Victor K-2 will be \$13.50 each, hopefully in stock by the time you're reading this ad). LS special airmail shipment 1/144 scale F-16 Thunderbird set. Includes three planes w/stand \$6.75, weapon sets No. 1 and No. 2 \$2.95 each. 1/72 Pitts S-2A Rothmans and Canadian reds \$2.50 each. (Prices on the above LS kits will go down when we receive the seasmall shipment). LS 1/144 A-10 \$2.69. (1/144 P-3C Orion hopefully in stock by the time you're reading this ad). Please check for price and availability). Tamiya 1/100 limited run F-4EJ Phantom \$2.95. Hasegawa limited edition 1/72 F-86 Blue Impulse \$4.79, 1/32 F-36 Blue Impulse with cloth patch \$2.95. Testors 1/72 F-5E \$4.50. F-16 Thunderbird \$4.50, 1/48 RF-4 Phantom Spirit of America \$5.59, 1/35 armor Chevy 15 CWT truck \$6.75, 234/3 armored car \$7.50, Panzer IV H \$8.25 and 155mm gun w/figures \$6.75. Fujimi special airmail shipment 1/72 Alpha jets French and German \$6.95 each. French aerobatic team \$6.50. Sea Harrier \$7.95. (Prices on the Fujimi kits will go down when we receive the seasmall shipment). MPC 1/72 F-105G \$4.25. This is a small selection of some of the kits we have in stock. Please send two 20¢ stamps for our latest free catalog to cover postage. Ordering instructions: Orders under \$10 add \$1.50 shipping fee, over \$10 add \$2. MasterCard/Visa and COD orders accepted. All New York State residents add 4% sales tax.

Books, booklets, all types of military vehicles (AFV's, trucks, jeeps, etc.). Wide selection. Free 12-page catalog. Portrayal Press, P.O. Box 1913, Bloomfield, NJ 07003. (201) 743-1851 evenings.

Slides for sale. Duplicate slides of armor, aircraft, and other military items. Guaranteed quality. List and sample \$1. Metco, Box 188F, Ford, NJ 08863.

Elite military miniatures and wargaming figures. 25mm Napoleonic wargaming figures: French Grenadiers (four) \$3, Polish Lancers (two) \$3, French gun and crew \$6. 40mm infantry kits \$3 each, French marine

officer 1779, Prussian Grenadier sergeant 1757, Russian Guards Fifer 1809, private U.S. marines 1812. 40mm cavalry kits \$6 each, French Cuirassier 1814, Prussian horse Grenadier 1759, Russian Cossack of Imperial Guard 1812. 40mm infantry figures \$2 each, Grenadier France 1779, Continental soldier ramming musket, Continental drummer, Cavalry figures \$3 each, Uhlan Lancer, Prussian Cuirassier 1757, Continental Dragon, Landsknechts, Knights, Franco-Prussian war figures, and more. Catalog \$1 deducted from your first order. Send to Elite, Dept. A, Box 24 West Side Station, Worcester, MA 01602.

Scratch builders. The complete source for scale model building materials, tools, and accessories. Catalog \$3, refundable. Small Sales Co., P.O. Box 7803, Dept. FS, Boise, ID 83707. For sale: New 1500 kit collection in lot no. 7. Send \$2 for list. APC Hobbies, Box 122, Earlysville, VA 22936. (804) 973-2705.

New: Tamiya 1/35 MUH with tow, \$6. Hasegawa 1/48 F4C/D \$15.75, Takara 1/100 F5G, Harrier, Yak 36, F-100, F8, \$3.75 each. Airfix 1/48 EA 6B \$14. Postage \$1.50 per order. MasterCard and Visa accepted. APC Hobbies, Box 122, Earlysville, VA 22936. (804) 973-2705.

Monogram kit 5602 1/24 scale, Huey attack helicopter. Jim Gribbin, 2535 Scoville, Brynwy, NJ 07002.

Tamiya 1/35: T-54, T-34/85; T-10, Aurora 1/48 F-101 Voodoo, 1/35 plans for M-2 Bradley, M-103; M-109, Russian T-72; BMP-1. Bill Wiseman, Rt. 8, Box 212, Lot 87, Morgan Town, WV 26505. (304) 594-2085.

Monogram Apollo CSM, released approximately 1970, scale unknown. Must be unassembled. Jeff Brown, 111-B Matador,

Wichita Falls, TX 76311. (817) 855-5754.

A modeler is looking for a pen-friend interested in model-kits exchange. I can offer the kits from Czechoslovakia, S.D.R. and USSR. Pavel Kupka, sidi, 93.5. bl. 216, c. 2444, 272 02 Kladno 2 Czechoslovakia.

Absolutely must have: 1/400 Heller Graf Spee, Scheer, Lützow, unbuilt. Send prices. Rainer Hanxleden, 1077-42 Santo Antonio, Colton, CA 92324.

Wanted: Kits you can't use. Send list to Charlie Pace, Box 122, Earlysville, VA 22936. (804) 973-2705.

LOCAL HOBBY SHOP DIRECTORY

TELL YOUR HOBBY RETAILER YOU SAW HIS AD IN FSM

Local Hobby Shop Directory listings are available for the next eight issues for \$110 (payable in advance) or for the next four issues for \$60 (payable in advance), or at \$15 per issue (minimum of four insertions). Ads will be set in standard listing typography. All insertions must be consecutive and may be charged if you have credit established with us. No mention of mail order business or area code permitted.

CLOSING DATE: Fall issue closes July 15. Winter issue closes October 15. Spring issue closes January 15, and Summer issue closes April 15.

ARIZONA — Glendale

Specialized for the detail modeler. Complete reference library.

Headquarters for ship models & parts.

VAL'S HOBBY HANGAR

5585 W. Camelback Rd. 934-6174

CALIFORNIA — Anaheim

Everything for the model ship builder; RC boats, cars, planes, military, science, tools, books & rocketry. AT HOBBY CITY. Open Mon-Fri 10-8. Sat & Sun 10-6.

CENTURY HOBBIES

1238 Beach Blvd. 821-8300

CALIFORNIA — El Cajon

Plastic aircraft & armor kits, wargames, wargame figures, books, decals and militaria. Open Mon-Fri 11-6. Sat 10:30-5. Sun 12-4.

MILITARY EMPORIUM

700 N. Johnson #N 447-6662

CALIFORNIA — Garden Grove

Military kits, aircraft from around the world. Plastic armor, aircraft, wargames, books, paints, tools. Open Mon-Thur 12-8 pm. Fri 12-8:30. Sat 10:30-7. Sun 12-5.

BROOKHURST HOBBIES

12741 Brookhurst Way 636-3580

CALIFORNIA — Lakewood

Importers of scale models, accessories, supplies, books & magazines from around the world plus all domestic lines.

THE MILITARY SHOP

Lakewood Center Mall No. 128 630-5556

CALIFORNIA — Los Angeles

We stock Revell, Monogram, AMT, Tamiya, Testor, Hasegawa & more. Tools & supplies. Also R/C planes, cars, boats, HO & N trains. Open Monday-Saturday 10:15-6 pm.

NATICK STORE

209 W. 4th St. (Downtown) 626-3339

CALIFORNIA — Orange

Complete stock of styrene, paints, supplies & kits for modelers. One of Southern California's most complete stocks of model railroad supplies from #1 ga. to Z ga. Open 7 days.

FRANK'S HOBBY SHOP

6667-668 N. Tustin Ave. 639-9901

CALIFORNIA — Ontario

We carry the tools, wood, plastic, and kits to complement any hobby field. Mon-Fri 10 a.m.-7 p.m., Sat 10 a.m.-6 p.m.

JACK'S HOBBYCRAFTS

2250 Suite B, So. Euclid 984-8700

IS YOUR SHOP LISTED?

THIS SPACE COULD BE USED

TO YOUR ADVANTAGE

CALIFORNIA — Pasadena

Wide selection of models featuring: aircraft, cars, ships, and military models. Also building supplies, books, paints, decals, parts, and tools.

THE MODEL WORKS

1655 E. Colorado Blvd. 793-8081

CALIFORNIA — Pismo Beach

Military models and books our specialty. Also HO & N trains and books. Collectors kits and out-of-print books.

PAT HOLDEN'S BIG FOOT HOBBIES

1020 Price St. 488-7215 eve's only

CALIFORNIA — Sacramento

Huge selection of foreign and domestic plastic kits. Books, games, figures, rockets, trains, paints and supplies. We special order.

RIVERSIDE HOBBIES

6407 Riverside Blvd. 392-9739

CALIFORNIA — Upland

One of the largest selections of kits, reference material, and accessories in the southwest.

J & M HOBBIES

1655 N. Mountain 985-9212

CALIFORNIA — Walnut Creek

Military kits, books, games, and figures. Open 11 a.m. to 5:30 p.m. daily.

CENTURION MILITARY HOBBIES

3087 N. Main St. 937-2623

COLORADO — Grand Junction

Western Colorado's complete hobby center. Mon-Fri 10 a.m.-6 p.m., Sat 9:30-5:30.

The HOBBY HUT

1125-27 North Ave. 242-8761

COLORADO — Loveland

HO & N gauge trains, plastic models. Wooden ships, wood supplies, paint supplies. X-acto and Dremel tools, model rockets. Open Mon-Fri 10:30-30, Sat 10-5. Sun 1-4:30.

THOMPSON'S HOBBIES

1730 W. Eisenhower Blvd. 669-2326

CONNECTICUT — Cos Cob

Trains, planes, armor, doll houses and miniatures. All hobby accessories.

HOBBY HOUSE

405 E. Putnam Ave. 869-0969

CONNECTICUT — Manchester

Complete plastics, cars, planes, trucks, ships, Military, diorama supplies, decals.

The TRAIN EXCHANGE

71 Hilliard St. 646-0610

CONNECTICUT — Milford

#1 in specializing in hard-to-find models, domestic and foreign.

HOBBY HAVEN

395 Boston Post Rd. 874-4434

DELAWARE — Wilmington

Open 9:30 to 5:30 Mon thru Fri; Sat 10:00 to 5:00. Complete assortment of hobby tools and large inventory of different models. If you can't find it, ask us!

VANDEVER'S HOBBY CENTER

905 Orange St. 658-3896

FLORIDA — West Palm Beach

Fine tools. Supplies. Special orders. Mon-Fri 9:30-6. Sat 9:30-3. Closed Sunday.

CRAFT HOUSE HOBBY SHOP

1079 N. Military Trail 683-0764

GEORGIA — Smyrna

HO & N scale for your railroading enjoyment. Complete line of plastic models and paints. Open daily 10-7. Sat. to 5. Closed Sunday.

HOBBY JUNCTION

3260 S. Cobb Drive 432-2538

WANTED

Monogram kit 5602 1/24 scale, Huey attack helicopter. Jim Gribbin, 2535 Scoville, Brynwy, NJ 07002.

Tamiya 1/35: T-54, T-34/85; T-10, Aurora 1/48 F-101 Voodoo, 1/35 plans for M-2 Bradley, M-103; M-109, Russian T-72; BMP-1. Bill Wiseman, Rt. 8, Box 212, Lot 87, Morgan Town, WV 26505. (304) 594-2085.

Monogram Apollo CSM, released approximately 1970, scale unknown. Must be unassembled. Jeff Brown, 111-B Matador,

GEORGIA — Warner Robins

Military models, books, plastic models, and paints. Also a complete line of HO and N gauge trains, RC planes, and rockets.

PARKERSON'S HOBBY SHOP

1727 Watson Blvd. 922-7944

ILLINOIS — Chicago

Complete stock domestic/imported N, HO, O kits and ready-to-run trains and supplies. Lionel, LGB, Unimat; crafts, boats, airplanes, live steam, collector's items.

TROST HOBBY SHOP

3111 W. 63rd St. 927-1400

ILLINOIS — South Holland

One of Chicago area's largest selections of plastic kits. 200 military, 500 cars, 400 planes, 100 ships, 50 trucks.

SCALE MODELS

1048 E. 162nd 339-3922

FILL ALL YOUR NEEDS

ALL THE TIME

MISSOURI — St. Louis

Everything in hobbies. MasterCard, Visa, and checks welcome. Two convenient locations.

ASTRO HOBBY HOUSE COMPANY

1245 S. Laclede Station Rd. 961-7093

NEVADA — Reno

Planes, trains, boats, cars, crafts, games, books, tools, and supplies. Open daily 10-6. Fri 10-9. Closed Sunday.

HIGH SIERRA MODELS

953 W. Moana Lane 825-9098

FILL ALL YOUR NEEDS

ALL THE TIME

AT YOUR HOBBY DEALER

NEBRASKA — Bellevue

Just outside the Strategic Air Command Museum means plastic models are our specialty. Worth a visit.

AIR-CRAFT HOBBIES

706 W. Mission 291-6630

NEW JERSEY — Cranford

One of the best little hobby shops in Jersey. Plastic kits, wooden ships, HO & N trains. Paints, books, fabulous displays.

DICK'S HOBBYLAND

16 North Union Ave. 272-7660

NEW JERSEY — East Brunswick

Role playing games, books, magazines, hobby kits from around the world. Military and fantasy miniatures. HO trains and paints.

ADVENTURE HOBBIES

290 Route 18, Int'l Mkt. 583-2088

NEW JERSEY — Pennsauken

The latest in plastic military kits, books, magazines, paints and decals. We have automobile and ship kits.

TED'S ENGINE HOUSE

6307 Westfield 662-0222

NEW JERSEY — Red Bank

One of New Jersey's most complete hobby centers. Open Mon-Wed 10-6. Thur & Fri 10-8. Sat 10-5. Sun 12-4.

HOBBYMASTERS

62 White Street 842-6020

NEW YORK — Brooklyn

Complete line of military kits, both domestic and imported. Paint and accessories. Mon, Thur, Fri 10:30 a.m.-8:00 p.m., Tue, Wed, Sat 10:30 a.m.-6:00 p.m.

WALT'S HOBBY SHOP, Inc.

7909 5th Ave. 745-4991

NEW YORK — Floral Park

Complete selection of models; military, airplanes, cars. Building supplies, paints, and tools.

MALVERNE HOBBY SHOP

270 Jericho Turnpike. 328-3496

NEW YORK — Flushing/Queens

Large selection of plastic and wood kits, diorama and scratchbuilding supplies, trains: HO & N, R/C supplies, metal figures and gaming, arts and crafts.

HARMONY HOBBIES

196-30 Northern Blvd. 224-6666

NEW YORK — Lindenhurst

Plastic model kits, books, paints, supplies and tools all at substantial discounts. Tamiya, Minicraft, Heller, Testors, Revell, etc.

R. M. GROENE & CO.

867 Atlantic St. 957-5923

NEW YORK — New York City

Kits and modeling supplies. Open Mon-Fri 10-5:45, Sat 10-5.

GATEWAY HOBBIES, INC.

682 West 38th St. 221-0855

NF NEW YORK — Utica

Imported & domestic plastic models. HO & N scale trains. Rockets, air brushes, books, scratchbuilding supplies.

DISCOUNT HOBBY CENTER
405 James St. 733-3741

NEW YORK — Yonkers

Plastic military model kits, scratchbuilding & diorama supplies, metal figures, airbrushes, decals, how-to books, HO trains, D&D figures. Mon. 3-8, Tues.-Fri. 10-8, Sat. 10-6, Sun. 1-5.

ED'S HOBBY SHOP
847 McLean Ave. 237-1649

OHIO — Cleveland

Airplanes, boats, RC, rockets, plastic kits, trains, books, tools, wargames. Mon-Fri 10-8:30. Tue-Wed-Thur-Sat 10-5.

NATIONAL HOBBY, INC.
5238 Ridge Road 749-2450

OHIO — Cleveland (Lakewood)

Large selection of aviation and military books and magazines, general hobbies. Open 7 days.

WINGS HOBBY SHOP
17112 Detroit Ave. 221-5383

OHIO — Columbus

All scales of imported and domestic aircraft, armor and miniatures. Decals, books, paints. 12-9 daily, 12-5 Sunday

STRETE HOBBIES
3655 Sullivant Ave. 279-6959

OHIO — Mansfield

Plastic military model kits, military medals, books, coins, military miniatures, D & D, wargames and hobby supplies. Mon-Fri 11 a.m.-6 p.m. Sat 12-6 p.m.

THE PANZER HUT
1345 Park Ave., W. 529-4339

OHIO — North Canton

Plastic model kits, how-to books & magazines, airbrushes & hobby tools, paint, wood & glue. HO trains, rockets, games. R/C specialists. Knowledgeable personnel. Special orders.

MODELER'S HAVEN
4255 Portage N.W. 499-6000

OHIO — Oak Harbor

Plastic & wood kits, scratchbuilding and diorama supplies. Tools and accessories. Personalized and friendly service. Located in the Mini-Mall.

OAK HARBOR HOBBIES
136 W. Water St. 898-1300

OREGON — Astoria

Plastic model kits, complete line of miniatures and boardgames, HO & Nscale supplies. Orders on request. Open 10 to 6 Mon-Sat.

LEN'S HOBBY CENTER
1150 Duane St. 325-1394

OREGON — Corvallis

Complete stock - R/C, plastics, trains, tools, paints, scenery, books, structural materials, airbrushes, woods, catalogs, trains Z, N, HO, O. Open Mon-Sat 10-7. Sun 1-5:30.

(D J'S) TRUMP'S HOBBIES
1875 NW 9th St. 753-7540

PENNSYLVANIA — Erie

Plastic kits, books, games, railroads. Metal figures, historical & fantasy. Open Monday-Friday 11-8. Saturday 9-5.

PENN STATION MODEL SHOP
3435 West Lake Rd. 833-5423

FILL ALL YOUR NEEDS**ALL THE TIME****AT YOUR HOBBY DEALER****PENNSYLVANIA — Philadelphia**

Plastic & balsa kits, cars, planes, ships, military modeling supplies, tools, paints. Badger, Paasche, BlueJacket ship fittings, trains, and miniatures.

MANAYUNK HOBBIES & CRAFTS
4303 Main St. 482-1691

RHODE ISLAND — Pawtucket

All types of model kits, domestic & imported, old & new, for all interests; plus books, paints, magazines, tools and supplies. Open Mon-Fri 4 p.m.-8 p.m. Sat 10 a.m.-6 p.m.

PARENT HOBBIES
270 West Ave. 722-2398

RHODE ISLAND — Westerly

One stop hobby center. Large selection of plastic & wood model kits. Many tools and accessories for easier modeling.

Open Monday thru Saturday
SHORELINER HOBBIES
100 Main Street 596-5323

TENNESSEE — Chattanooga

Hobby supplies for the craftsman in modeling autos, trucks, planes, armor, figures. Come see our customers' award winning displays. Open Mon.-Sat. 10 a.m.-9 p.m., Sun. 1-5 p.m.

CHATTANOOGA HOBBY CENTER
5425 Highway 153 North 875-8231

TEXAS — Abilene

Quality models for creative modelers. Full line hobby shop featuring plastic models, trains, RC, fantasy figures and games. Stop and say 'hi' to Margaret and Otto!

THE HOBBY CENTER
3421 S. 1st 672-7388

TEXAS — Abilene

For just about the best scale modeling and models. Monthly meetings. Open 9-5:30 Monday through Saturday.

MAKER'S HOBBIES
715 Grape Street 673-3291

TEXAS — Arlington-D/FW Metroplex

Kits-tools-details-wood-plastic Books-scenics-paints-R/C/D/D HO, N railroad layouts

Mon-Fri 10-8, Sat 10-6. We are modelers.

THE HOBBY HUB
903A Pioneer Pkwy W. 265-8101

TEXAS — Austin

Our specialty is scale modeling. Wide selection of domestic and foreign kits, paints, tools, books and supplies.

KING'S HOBBY SHOP
8810 Lamar 836-7388

TEXAS — El Paso

Largest selection of aircraft and military models in west Texas. Also: Paints, books, Microscale decals and finishing products for modeling. Expert advice. 10 to 6:30 Mon.-Sat.

HAL'S HOBBY SHOP, INC.
No. 57 Sunrise Ctr. 755-1914

TEXAS — Irving (Dallas Area)

Aviation books, profiles, magazines, imported plastic kits. HO, N scale trains, FAOW, R/C, U/C planes and cars. Mon 1-7. Tue-Sat 9:30-7.

M-A-L HOBBY SHOP
108 S. Lee St. 438-9233

UTAH — Roy

Complete lines of plastics, books, wargames and figures, accessories and paints with expert advice to aid you.

Special ordering is our business.
MATT'S MODELS
5649 S. 1900 W. 825-1400

VIRGINIA — Virginia Beach

Specializing in Lionel, HO, N trains and accessories. Repair service available. Complete hobby & craft store. Daily 10-8.

PEMBROKE STATION
4576-8 Pembroke Mall 490-2912

F	1st Armored Model Supply Company	42	Model Rectifier Corp.	76
	FineScale Modeler	19, 59	Modeler's Discount Hobby Shop	12
	Floquil-Polly S Corp.	27	The Model Works	45
	Paul Freiler Historic Models	70	Murphrey Model Products	14
G	Gateway Hobbies	18	N	—

	Grandt Line Products	13	Naval Institute Press	62
			NorthWest Short Line	59

H	Harold's Place	42	O	101st Airborne Military Models, Inc.
	R. H. Hebner Distributing Co.	35	P	Pacer Technology & Resources, Inc.
	Hobbyland	4		The Plastic Place

I	Hobby Helpers	4	R	Repla-Tech International
	Hugh's Aviation Prints	27	S	Scale Aircraft Modeling
				Scientific Models

J	IPMS/USA	64		The Soldier Centre
	I R Miniatures	27		South Bay Miniatures
	Icarus Models	14		The Spare Time Hobby Shop
	Imported Specialties	59		Squadron / Signal Publications
	International Graphics Corp.	29		Strete Hobbies

K	International Hobby Corp.	68	T	Tenax 7R
	Kalmbach Publishing Co.	67		Tools For Hobbies
	Kit Collectors Clearinghouse	51		299 Models
	A. Kempees	64		

L	LST Products	71	V	Victoria Products
	Lencraft	14		Vintage Castings
M	Maxon	4	W	W.R.W. Imports
	Meta Models	29		Waldrone Model Products

	Metalizer Products	12		Williams Brothers
	Metropolitan Model Supply	70		
	Micro Mart	63		
	Minicraft Models, Inc.	16		
	E. C. Mitchell Co., Inc.	16		

	Mitchell Products	6	X	X-Acto
	Monogram Models	10, 75		
	Model Expo	29, 36, 37, 65		

				45
--	--	--	--	----

WASHINGTON — Bellevue

One of Seattle's finest shops for the fine scale modeler. Open Mon-Tue 10-8. Fri & Sat 10-5.

THE TRIPLE ALLIANCE
10328 Main Street 453-8939

WASHINGTON — Oak Harbor

Plastic models. MicroScale decals — Humbrol paint. Complete model railroading department.

TED'S HOBBY & TOY
1090 W. Pioneer 675-4392

WASHINGTON — Seattle

Scale model ships, trains, planes, tanks, military & wargaming miniatures, books, tools, decals, etc. Mon, Wed, Fri 12:30-6:00; Tue, Thur 12:30-8:00; Sat 10:00-6:00.

American Eagles Inc. Military Hobbies
8556-58 Greenwood N. 782-8448

WISCONSIN — Madison

One of the midwest's most complete hobby shops. Tools, plastic kits, wargames, model railroading, miniatures. Hours: 9-9 Mon & Fri, 9-6 Tue, Wed, Thur, 9-5:30 Sat, 12-5 Sun.

MIDVALE HOBBY SHOP
505 S. Midvale Blvd. 238-2233

CANADA — Alberta, Edmonton

Fine scalers' supplies, literature hobby tools, special orders

ROUNDHOUSE SALES

7931 104th St. 433-0917

CANADA — Fredericton, N.B.

The modelers store. Specializing in trains, armor, planes, war & fantasy games. Only quality lines stocked. Open Tue-Wed 9-5. Thur-Fri 9-9. Sat 9-5.

THE RAILHEAD

384 Queen Street 455-9274

CANADA — Ottawa, Ontario

One of Canada's leading model shops. Complete line of military & aircraft kits, decals, paints and accessories.

HOBBY HOUSE, LTD.
478 Rideau St. 232-2778

CANADA — Kingston, Ontario

Serving the model builder since 1951. Always an outstanding variety of plastic kits R/C, railroad, figures, games, tools and books. Daily 9-5:30. Fri 9-9. Closed Monday

LLOYD SHALES HOBBY SUPPLIES
208 Division St. 548-8427

MRC™ TAMIYA'S REVOLUTIONARY PAINT MARKERS...

They'll Make A Professional Out Of You.



Repair worm-off
chrome work

Perfect Painting...
Perfect Detailing. From the master modelers at MRC-Tamiya comes this advanced concept for finishing plastic models.

These enamel paint markers allow even the novice to get professional results while the expert will find it an indispensable tool for detailing and saving time and effort. In short, it makes detailing easier than ever before.

Unlimited Applications

The narrow edges let you paint small areas and stripes, markings and other minute details...the flat edge means you can now get a smooth, free flowing finish in broad areas without mess, without dripping or cleaning up.

Now paint raised surfaces, detail projecting and intricately molded parts without overflowing. Use the markers for car ornamentation, insignias, lights and grille work. The colors are sensational. You'll be delighted to find our metallic chrome silver is probably the most realistic chrome finish ever made. Motorcycle detailing turns out professionally.

Great for the tiny crevices in figures, too. Add highlights and touches of realism to the smallest spaces on your models. Tanks and armor come to life when finished with MRC-Tamiya markers. Think of all the uses from landing gear to battle



Display
case holds twelve of the most
popular detailing colors.

field accessories to diorama setups and much more.

A Perfect Match For MRC-Tamiya Acrylic Paints

The free-flowing paint in these enamel markers can be applied over MRC-Tamiya acrylics. Works beautifully over lacquers, too. It lets you do striping and lettering without worrying about ruining your undercoat. By the same token, you can use Tamiya acrylics over the markers to get results never before achievable. To make it simple, we've named, coded and color-matched the markers to our acrylics.

A Little Marker Goes A Long Way

Offered in the 12 most popular detailing colors, MRC-Tamiya markers will revolutionize model finishing. Perfect for glass, metal and wood, as well as plastic. And there is enough paint in these simple to use markers to completely paint 15 1/24 scale cars, so just think of how much detailing you can do. Now, that's an economical finishing tool.

MRC-Tamiya enamel paint markers...they'll make a professional out of you.

Use on raised
surfaces



Paint window
frames



Detail
painting

MRC-Tamiya Paint Markers
...for detailing cars, tanks,
armor, ships, planes
and all your other
prized
models.



Model Rectifier Corporation
2500 Woodbridge Avenue
Edison, New Jersey 08817

MRC is a trademark of Model Rectifier Corporation

Relive the history of flight!

Monogram introduces the *Heritage Edition™* Series.



The legends of flight are available again in a special collection series of model kits. And for a limited time only. These historic craft are considered by collectors to be classics of aviation history and the model-maker's art.

Produced from tooling made by some of the finest craftsmen in the industry, these kits reflect the exquisite workmanship and detailing worthy of a modeler's patience and skill.

You will want to collect the entire series of *Heritage Edition* kits, exclusively from Monogram. Apollo Saturn V Rocket. Wright Cyclone Engine. Grumman Gulfhawk. P-51 Mustang. U.S. Space Missiles. Ford Trimotor. Kitty Hawk. Super G Constellation. C-47 Spooky. Each sold separately.

Send \$2.00 (check or money order) for the 1983 Monogram catalog, 49 pages in color detailing the full collection of Monogram kits. Available through 1/31/84. Offer good only in U.S.A.

MONOGRAM

